

CHARACTERISTICS AND VOLUNTEERING BEHAVIORS OF PURDUE MASTER
GARDENER INTERNS AND MASTER GARDENERS

A Thesis
Submitted to the Faculty
of
Purdue University
by
Elizabeth Ann Gall

In Partial Fulfillment of the
Requirements for the Degree
of
Master of Science

August 2012
Purdue University
West Lafayette, Indiana

To everyone who supported me in this endeavor.

ACKNOWLEDGEMENTS

Mom and Dad: You have never told me there was a single thing I could not accomplish. You taught me the importance and love of working hard for the things that matter. Thank you for abiding by my wishes that day in 3rd grade that I came home and demanded that we begin recycling at our house, which helped to foster my commitment to the environment and all my subsequent academic, service, and career pursuits. I could never begin to repay you for all you have taught and given me.

Sharon: You have always been the sister that I have looked up to and admired. You are such an inspiration to me. Whatever God has put in your way, you have tackled. I know that you have so many more wonderful things to accomplish in your life and I am glad I am here to share them with you.

Diane: I know our relationship is full of the struggles that come with being sisters who are very close in age. But thank you for all the times that you make me laugh and all the times that I have someone with which to talk about mutual interests.

Carl, Michael, Johanna, and Isabella: You guys are the best additions to a family I could have asked for. I am always smiling, laughing, or just genuinely content with life when I am with you.

Matt: Thank you so much for all your love and support. Sometimes life leads us in ways we had never imagined. Somehow on a whim, I applied to Purdue, which brought me here to you, and for that, I will be forever grateful to God. I never could have completed this process without you. You oftentimes believed in me when I didn't. You are an amazing person and I am so blessed to have you in my life. I love you.

Dr. Orvis: Thank you so much for being my advisor. I never could have done this without you. You kept me sane by talking me down every time I had a freak-out (and that was often). Thanks for spending all those late nights reading my thesis (and all the times you fell asleep at your computer, reading my thesis) so we could get me to the endpoint.

Dr. Tucker: Thank you for trudging through the ordinal logistic model with me and for being willing to tackle something with me that neither one of us was very familiar with. Thank you also for keeping me sane those last few weeks by always finding something for me to laugh about.

Rosie: Your expertise was essential to this project and I couldn't have done this without you. Thank you for serving on my committee.

Dr. McKinley: Thank you also for serving on my committee and being the grammar guru that I needed (I used to be much better at it, I promise).

Ce-Ce: Thank you for all the help with statistics and providing overall support with my project.

National 4-H Council/Toyota: Thank you for providing the funding for my assistantship so that I could conduct this research.

Dr. Carroll: Thank you for being a supportive supervisor. You allowed me the opportunities to grow as an educator and I am very thankful for that. You also worked with Dr. Orvis and me to make sure my research and work responsibilities were both completed.

TABLE OF CONTENTS

	Page
LIST OF TABLES	ix
LIST OF FIGURES	xii
ABSTRACT	xiii
CHAPTER ONE: INTRODUCTION AND REVIEW OF LITERATURE	1
Introduction	1
Extension Master Gardener Program	4
Purdue Master Gardener Program	6
Service-Learning and Social Responsibility	10
Volunteering and Volunteering Behaviors	12
Definitions	14
Purpose	14
Research Questions	15
Review of Literature.....	15
Theoretical Framework	16
Conceptual Framework	18
Variables in the Model	20
Demographics	21
Attitudes.....	22
Self-Efficacy	24
Participation in the Purdue Master Gardener Program.....	25
Prior Volunteering Experience	26
Educational Training Evaluation.....	28
Similar Studies	29
Summary	35
List of References.....	36

	Page
CHAPTER TWO: METHODS, RESULTS, AND CONCLUSIONS.....	48
Methods.....	48
Development of Questionnaire.....	48
Structure of Questionnaire.....	51
Variables in Questionnaire.....	54
Demographics.....	54
Attitudes about Citizen and Individual Responsibility to Volunteer.....	56
Self-Efficacy to Make a Positive Impact and Capacity to Volunteer.....	58
Participation in the Purdue Master Gardener Program.....	59
Prior Volunteer Experience.....	61
Educational Training Evaluation.....	63
IRB Approval.....	64
Researcher's Paradigm.....	65
Pilot Test.....	65
Final Questionnaire Implementation.....	69
Statistical Analysis.....	71
Predictive Model.....	75
Summary.....	76
Results.....	78
Descriptive Statistics.....	78
Demographic Data.....	78
Attitudes about Citizen and Individual Responsibility to Volunteer Data.....	94
Self-Efficacy to Make a Positive Impact and Capacity to Volunteer Data.....	97
Participation in the Purdue Master Gardener Program Data.....	102
Prior Volunteering Experience Data.....	108
Educational Training Evaluation Item Data.....	115
Total Volunteer Hours per Month Data.....	124
Relationships between Predictive Variables and Dependent Variable.....	125
Demographic Relationships.....	125
Attitudes about Citizen and Individual Responsibility to Volunteer Relationships.....	128
Self-Efficacy to Make a Positive Impact and Capacity to Volunteer Relationships.....	129

	Page
Participation in the Purdue Master Gardener Program Relationships	130
Prior Volunteer Experience Relationships.....	133
Relationships among Predictive Variables	136
Predictive Model	140
Discussion	145
Research Question #1a	145
Research Question #1b.....	146
Research Question #2.....	149
Research Question #3.....	156
Research Question #4.....	159
Conclusions	162
Conclusion #1	162
Conclusion #2.....	164
Conclusion #3.....	167
Implications.....	171
Limitations of the Study.....	172
Recommendations for Future Study.....	174
Summary	175
List of References.....	177
APPENDICES	
Appendix A: Email to Purdue Master Gardener County Coordinators	185
Appendix B: Feedback Survey on Program Evaluation Tool.....	186
Appendix C: Purdue Master Gardener Program Evaluation Tool	188
Appendix D: Email to Participants of Pilot Test.....	190
Appendix E: Pilot Questionnaire	191
Appendix F: Email to Participants of the Final Questionnaire	212
Appendix G: Final Questionnaire	213
Appendix H: IRB Approval Letter for Exempt Status.....	227
Appendix I: Pilot Test Results	228

LIST OF TABLES

Table	Page
Table 1. Purdue Master Gardener Recognition Levels.....	9
Table 2. Level of Measurement of Items and Statistical Analyses.....	73
Table 3. Frequency Distribution of Gender Demographic Data of Purdue Master Gardeners.....	79
Table 4. Frequency Distribution of Age Demographic Data of Purdue Master Gardeners.....	80
Table 5. Frequency Distribution of Highest Level of Education Achieved Demographic Data of Purdue Master Gardeners.....	81
Table 6. Frequency Distribution of Occupation Demographic Data of Purdue Master Gardeners.....	82
Table 7. Frequency Distribution of Gross Estimated Household Income Demographic Data of Purdue Master Gardeners.....	85
Table 8. Frequency Distribution of Marital Status Demographic Data of Purdue Master Gardeners.....	86
Table 9. Frequency Distribution of Number of People in Household Demographic Data of Purdue Master Gardeners.....	87
Table 10. Frequency Distribution of Race Demographic Data of Purdue Master Gardeners.....	88
Table 11. Frequency Distribution of Ethnicity Demographic Data of Purdue Master Gardeners.....	89
Table 12. Frequency Distribution of County of Participation in the Program Demographic Data of Purdue Master Gardeners.....	90
Table 13. Frequency Distribution of Attitudes of Purdue Master Gardeners about Citizen and Individual Responsibility to Volunteer.....	95
Table 14. Open-coded Responses of Self-reported Changes in Attitudes about Volunteering of Purdue Master Gardeners.....	97
Table 15. Frequency Distribution of Self-Efficacy to Make a Positive Impact and Capacity to Volunteer of Purdue Master Gardeners.....	99

Table	Page
Table 16. Open-coded Responses of Self-reported Changes in Self-efficacy to Make a Positive Impact of Purdue Master Gardeners.....	101
Table 17. Open-coded Responses of Self-reported Changes in Self-efficacy of Capacity to Volunteer of Purdue Master Gardeners.....	102
Table 18. Frequency Distribution of Years as a Master Gardener of Purdue Master Gardeners.....	104
Table 19. Frequency Distribution of Status in the Program of Purdue Master Gardeners.....	105
Table 20. Frequency Distribution of Master Gardener Volunteer Activities of Purdue Master Gardeners.....	106
Table 21. Frequency Distribution of Master Gardener Volunteer Hours per Month of Purdue Master Gardeners.....	107
Table 22. Frequency Distribution of Self-reported Volunteering Activities of Purdue Master Gardeners before Participation in the Purdue Master Gardener Program.....	109
Table 23. Frequency Distribution of Volunteering Hours Prior to Program Participation of Purdue Master Gardeners.....	110
Table 24. Frequency Distribution of Reasons Reported by Purdue Master Gardeners for not Volunteering Prior to Program Participation.....	111
Table 25. Participation of a Purdue Master Gardener in a Service-Learning Opportunity Prior to Program Participation.....	112
Table 26. Participation of Purdue Master Gardeners in Volunteering as a Child or Young Adult.....	113
Table 27. Participation of Purdue Master Gardeners in Volunteering as a Requirement from Employer.....	114
Table 28. Frequency Distribution of Reported Adults who Emphasized Volunteering in a Purdue Master Gardener's Life.....	114
Table 29. Purdue Master Gardener Interns' Reasons for Participating in the Program.....	116
Table 30. Program Benefits Perceived by Purdue Master Gardener Interns.....	117
Table 31. Use of Environmentally Friendly Gardening Practices by Purdue Master Gardener Interns.....	118
Table 32. Use of Specific Gardening Practices by Purdue Master Gardener Interns.....	120
Table 33. Financial Savings Perceived by Purdue Master Gardener Interns due to the Purdue Master Gardener Program.....	121
Table 34. Purdue Master Gardener Intern Evaluation of Educational Training Logistics.....	122
Table 35. Purdue Master Gardener Intern Evaluation of Educational Training Session.....	123

Table	Page
Table 36. Total Volunteering Hours per Month (Including Master Gardener and non-Master Gardener Hours) of Purdue Master Gardeners.....	125
Table 37. Relationships between Demographics and Total Volunteer Hours per Month of Purdue Master Gardeners by Pearson's r and Point Biserial Correlations.....	127
Table 38. Relationships between Demographics and Total Volunteer Hours per Month of Purdue Master Gardeners by One-way ANOVAs.....	128
Table 39. Relationships between Attitudes of Purdue Master Gardeners and Total Volunteer Hours per Month by Pearson's r Correlation.....	129
Table 40. Relationships between Self-efficacy of Purdue Master Gardeners and Total Volunteer Hours per Month by Pearson's r Correlation.....	130
Table 41. Relationships between Participation in the Purdue Master Gardener Program and Total Volunteer Hours per Month by Pearson's r and Point Biserial Correlations.....	132
Table 42. Relationships between Prior Volunteering Experience Items and Total Volunteer Hours per Month of Purdue Master Gardeners by Pearson's r and Point Biserial Correlations.....	134
Table 43. Relationships among Potentially Predictive Variables of Volunteering Behaviors by Pearson's r and Point Biserial Correlations.....	138
Table 44. Interpretation of Questionnaire Item Codes for Correlation Matrix of Relationships among Potentially Predictive Variables.....	139
Table 45. Predictive Model of Total Volunteer Hours per Month Regressed Against Seven Independent Variables of Purdue Master Gardeners by Ordinal Logistic Regression.....	142

LIST OF FIGURES

Figure	Page
<i>Figure 1.</i> Diagrammatic illustration on the Theory of Planned Behavior (Ajzen, 1991)	17
<i>Figure 2.</i> Diagrammatic illustration of conceptual framework of study	20
<i>Figure 3.</i> Diagrammatic illustration of responding Indiana counties	93
<i>Figure 4.</i> Diagrammatic illustration of predictive model	144

ABSTRACT

Gall, Elizabeth A. M.S., Purdue University, August 2012. Characteristics and Volunteering Behaviors of Purdue Master Gardener Interns and Master Gardeners. Major Professor: Kathryn S. Orvis.

Descriptive characteristics of Purdue Master Gardener Interns and Master Gardeners and participants' perceptions of the educational training portion of the Purdue Master Gardener (PMG) Program were measured through a web-based questionnaire. The questionnaire was completed by 673 Purdue Master Gardener Interns and Master Gardeners. The Theory of Planned Behavior (Ajzen, 1991) was utilized to construct a conceptual model with five potentially predictive variables to volunteer behavior. Demographics, attitudes, self-efficacy, participation in the PMG Program, and prior volunteering experience were measured and relationships between predictive variables and total volunteer hours per month were explored. These variables were also utilized to create a model that may predict volunteering behaviors within the Purdue Master Gardener Program.

Results from the study indicate the majority of current Master Gardeners are female, white/Non-Hispanic, above United States median income level, and above United States average education level. Purdue Master Gardener Interns reported satisfaction with the educational training portion of the program. Self-efficacy was reported as

having increased through participation. Respondents of the survey also reported having strong, positive attitudes about volunteering with no significant increase through participation in the program. This result indicates strong, positive attitudes about volunteering were held before participation in the PMG Program.

A predictive model of volunteering behaviors was constructed using seven individual items within the predictive variables: education, self-efficacy, years as a Master Gardener, whether or not the respondent volunteered before participation in the Purdue Master Gardener Program, whether or not the respondent participated in a service-learning experience before participation, if respondent had volunteered as a child or young adult, and if respondent had influential adults in one's life who emphasized volunteering. The predictive model of volunteering behaviors has many implications for predicting volunteer behavior within the PMG Program and potentially other volunteering contexts.

CHAPTER ONE: INTRODUCTION AND REVIEW OF LITERATURE

Introduction

Volunteering is a large component of American society, about 62 million Americans, or 26% of the population, volunteered in 2010 (Corporation for National and Community Service [CNCS], 2012). The worth of volunteer service hours contributed to communities around the United States in 2010 was almost 173 billion dollars, roughly 8.1 billion hours (CNCS, 2012). Volunteering provides services that might not be available without people giving freely of their time, for activities such as mentoring, helping to serve meals at soup kitchens, cleaning up a local river, and donating produce from a community garden to a food pantry. With so many Americans participating in volunteering, understanding volunteer behavior becomes important for those facilitating volunteers, working with volunteers, or dealing with volunteers or volunteer behavior in any capacity. Understanding volunteers and volunteer programs assists with their implementation and management.

Some types of volunteering, such as donating produce from a community garden, centers on gardening. Gardening is an activity in which many people in the United States participate. In 2010, 80 million households, 68% of the population of the United States, participated in some type of gardening activity (National Gardening Association [NGA], 2011). These gardening activities include lawn care, flower gardening, vegetable

gardening, fruit trees, herb gardening, water gardening, and multiple other gardening activities. Lawn care (53 million households), houseplants (34 million households), and flower gardening (33 million households) composed the three largest gardening categories (NGA, 2011). The 80 million households spent a combined total of almost \$29 million on gardening activities in 2010 (NGA, 2011).

Immersion in nature for activities such as gardening has multiple benefits to the physical and emotional well-being of those who take part (Park, Shoemaker, & Haub, 2009; Waliczek, Zajicek, & Lineberger, 2005). For example, Park et al. (2009) found that older, adult gardeners who gardened enough to meet the CDC recommendations for physical activity were overall healthier than other older, active adults who did not garden, but met the CDC recommendations in other ways. Gardeners were also found to have a higher mean life satisfaction score than non-gardeners (Waliczek et al., 2005).

The large interest in gardening leads to a demand by the public for accurate information about horticultural topics, trends, and research. The Extension Master Gardener Program, sponsored by the Cooperative Extension Service, is one source of comprehensive gardening information for the public (Chamberlain, 1982). The Cooperative Extension Service was initially established as a means to disseminate research-based information from land grant universities to the public under the Smith-Lever Act in 1914 (US Congress). The Cooperative Extension Service operates under the United States Department of Agriculture National Institute of Food and Agriculture (USDA-NIFA).

The Extension Master Gardener Program is a nationwide horticultural education and volunteer service program sponsored by land grant universities to train volunteers to

help disseminate horticultural information to the public (Boyer, Waliczek, & Zajicek, 2002). It was begun in Washington State in 1972 due to a demand for horticultural knowledge by the public and lack of time by Extension staff to field all questions coming in (Boyer et al., 2002). Participants of the program attend educational training on several core training areas, including plant science, plant disease, plant nutrition, insect pest, weed identification and management, pesticide safety, and soils (*Become a Purdue Master Gardener*, 2008). These horticultural topics are taught by Extension staff or other experts and participants are then expected to volunteer as part of the Master Gardener service (Meyer, 2007; Schrock, Meyer, Ascher, & Snyder, 2000).

Within the State of Indiana, the Extension Master Gardener Program is conducted through Purdue University in West Lafayette. Participants of the program register through Purdue Master Gardener County Coordinators. Participation in the program begins by taking a series of educational training sessions on various horticultural topics. At the end of these training sessions, the participant will take a knowledge exam, and after receiving a passing score of 70%, will be given the title of Master Gardener Intern. After the educational training hours are complete, the participant is expected to begin volunteer service hours and complete a set amount of hours before being awarded the certification of *Purdue Master Gardener*. There are multiple awards or certifications that a participant may receive based upon additional education and service hours completed (Purdue Master Gardener Program State Advisory Committee, 2010).

This study is both descriptive and potentially predictive. The current study also wishes to add to the existing literature on volunteering behaviors by looking at multiple

potentially predictive variables within one context and providing a framework for measuring these variables in other volunteering contexts.

Through identification of potentially predictive variables of volunteering behaviors of Purdue Master Gardener Interns and Master Gardeners and providing a description of the program, coordinators of the program will have additional information and feedback. By understanding who is likely to participate and become a volunteer, coordinators could then market to those who share those particular predictive variables for recruitment. As a result, the number of volunteers and volunteer hours may increase. Information learned about the program could also lead to program content and delivery being adapted to improve effectiveness for future participants.

Extension Master Gardener Program

The Extension Master Gardener Program began in Washington State in 1972 and has grown into a nationwide program. By 1996, all 50 states, the District of Columbia, and four Canadian provinces conducted Extension Master Gardener Programs (Meyer, 2007).

Participants of the Extension Master Gardener Program most often cite the desire for horticultural knowledge as a reason for beginning participation in the program (Boyer et al., 2002; Schrock et al., 2000; Strong & Harder, 2010; Wilson & Newman, 2011). Some participants also state a desire to contribute to the community (Schrock et al., 2000;

Strong & Harder, 2010). For some, the perceived social aspects of the program are a reason for beginning participation (Strong & Harder, 2010; Wilson & Newman, 2011).

Extension Master Gardeners often have advanced degrees beyond high school (Boyer et al., 2002; Kirsch & VanDerZanden, 2002; Mayfield & Theodori, 2006; Rohs, Stribling, & Westerfield, 2002; Schrock, Meyer, Ascher, & Snyder, 1999), are married (Mayfield & Theodori, 2006; Rohs et al., 2002; Schrock et al., 1999; Wilson & Newman; 2011), occupy a higher than United States median income bracket (Boyer et al., 2002; Rohs et al., 2002; Schrock et al., 1999; Wilson & Newman; 2011), are older (Boyer et al., 2002; Kirsch & VanDerZanden, 2002; Rohs et al., 2002; Wilson & Newman; 2011), often retired (Boyer et al., 2002; Kirsch & VanDerZanden, 2002; Schrock et al., 1999; Wilson & Newman; 2011), white, not of Hispanic origin (Boyer et al., 2002; Kirsch & VanDerZanden, 2002), and female (Mayfield & Theodori, 2006; Kirsch & VanDerZanden, 2002; Rohs et al., 2002; Schrock et al., 1999; Wilson & Newman; 2011).

Historically, most Master Gardeners' volunteer time was spent answering calls over horticultural hotlines (Meyer, 2007). Today, many additional volunteer opportunities exist such as demonstration gardens, community gardens, displays and booths at county and state fairs, and a multitude of other activities that improve the environment or the community (Chalker-Scott & Collman, 2006; Meyer, 2007; Relf & McDaniel, 1994; Ruppert, Bradshaw, & Stewart, 1997). Educating the public on horticultural topics remains an overall mission of the program (Bobbitt, 1997; Chalker-Scott & Collman, 2006; Meyer, 2007).

A large number of volunteers remain active in the program for many years (Schrock et al., 2000). This may be due to numerous reasons. Participants perceive

many personal benefits of the program and these perceived benefits may lead to Master Gardeners continuing in the program for multiple years (Meyer, 2007). Extension Master Gardeners value the horticultural knowledge they have gained through the program (Boyer et al., 2002). The perception of prestige of the Extension Master Gardener Program was seen by some to be a benefit to participation (Rohs et al., 2002; Schrock et al., 2000). Participants also appreciate having the flexibility in the volunteer service activities conducted and completed (Rohs et al., 2002; Schrock et al., 2000).

Despite some participants in the national Extension Master Gardener Program who continue to remain active, several do not; and retention of participants is a concern within the program (Meyer, 2004; Stouse & Marr, 1992). The most commonly cited reason for a participant not remaining in the program is lack of time or other personal commitments (Meyer, 2004).

Many characteristics are similar throughout the Extension Master Gardener Program, but the program is conducted differently in every state and is sometimes conducted differently in counties or groups of counties within a state. However, in the State of Indiana, there are state guidelines for county programs to follow.

Purdue Master Gardener Program

The Purdue Master Gardener (PMG) Program is conducted in the State of Indiana through Purdue University in West Lafayette and coordinated through county offices of Purdue Extension. The program began in Indiana in 1978 in four counties (“About the

Purdue Master Gardener Program,” 2012). By 1982, the program was operating in 10 counties (Chamberlain, 1982).

The purpose of the PMG Program, according to the Purdue Master Gardener Program Policies (2010) is to “teach people more about growing plants and to more effectively extend information related to plants.” Its specific aim is to “provide information and technical assistance in the areas of gardening and home horticulture through the use of trained and certified volunteers (Purdue Master Gardener Program State Advisory Committee, 2010).”

The PMG Program is conducted on a county level or, in some cases, multiple counties come together to implement the program. Interested individuals enroll in the program at the local Purdue Extension County Office. There is a fee for supplies and literature associated with the educational training, and participants enter the program knowing there is an expectation of volunteering time to assist Extension Educators with sharing horticultural knowledge with the public. Certain characteristics of the program are the same throughout the state, but the educational training may be implemented differently. Many of the logistics for educational training sessions, such as time of the year, time of the day, and facilities, vary among counties.

The participants of the PMG Program complete a minimum of 35 hours of educational training on various horticultural topics and pass a knowledge exam with at least 70% accuracy to earn the title of Master Gardener Intern (Purdue Master Gardener Program State Advisory Committee, 2010). The core training areas covered in the educational training are plant science, plant disease, plant nutrition, insect pest, weed identification and management, pesticide safety, and soils (*Become a Purdue Master*

Gardener, 2008). After the educational training, the Intern must then complete a minimum 35 hours of volunteer service to earn the certification of Purdue Master Gardener (Purdue Master Gardener Program State Advisory Committee, 2010). This volunteer service may consist of many different activities such as organizing community garden projects, answering hotlines, presenting educational programs, donating produce from garden projects to local food pantries, and providing horticultural therapy programs in nursing homes (“About the Purdue Master Gardener Program,” 2012). The Intern will receive a certificate verifying the requirements have been met to be certified as a Purdue Master Gardener (Purdue Master Gardener Program State Advisory Committee, 2010).

To remain active in the program and maintain the certification of Purdue Master Gardener, each year the participant must volunteer a minimum of 12 hours and complete a minimum of six educational training hours through advanced training sessions or participation in Master Gardener conferences (Purdue Master Gardener Program State Advisory Committee, 2010).

Purdue Master Gardeners also have the opportunity to earn advanced certifications through additional educational training and volunteer hours (Purdue Master Gardener Program State Advisory Committee, 2010). The different certifications are based on the number of additional hours completed. As of January 2012, implementation of a Platinum certification is being considered to recognize those participants who have received the Gold award and would like to continue to complete educational training and volunteer hours for additional certification (Rosie Lerner, personal communication, January 30, 2012). See Table 1 for educational training hours and volunteer hour requirements for each stage.

Table 1

Purdue Master Gardener Recognition Levels

Award	Cumulative Educational Training Hours	Cumulative Volunteer Hours	Total Hours
Master Gardener	35	35	70
Advanced	45	60	105
Bronze	60	200	260
Silver	75	500	575
Gold	100	1000	1100

Note. Adapted from “Purdue Master Gardener Program Policies,” by Purdue Master Gardener Program State Advisory Committee, 2010.

Demographics of Purdue Master Gardeners were described in a Master’s thesis in 1982 (Chamberlain, 1982) as follows: 40.8% were between ages 31 and 50; 41.5% between ages 51 and 70; 13.1% under age 30; and 4.6% over age 70. The top three occupations were homemaker (33.3%), horticultural occupations (19.8%), and retired (15.1%). At that time there were 248 Master Gardeners in the State of Indiana in 10 counties. Of the 168 Master Gardeners sampled, 66% of them reported entering the program to gain horticultural knowledge.

In a study conducted by Dana et al. (1993) describing pesticide use and attitudes of Purdue Master Gardeners, demographics were described from a sample size of 567. The demographics were as follows: 45% were between the ages of 31 and 50; 40.1%

were between the ages of 51 and 70; 3.2% under the age of 30; and 11.7% over the age of 70, with a mean age of 53.2 years. More than half (54%) of respondents had completed college or higher degrees, and less than one percent did not finish high school.

The PMG Program now operates in 85 counties within the State of Indiana (“Purdue Master Gardener Intern Training Opportunities,” 2012). There are an estimated total of 3,291 active Purdue Master Gardeners in the program (as of Feb. 2011), contributing over 125,000 volunteer hours to their communities throughout the state (Rosie Lerner, personal communication, January 18, 2012). This is the equivalent of contributing \$2.6 million in volunteer service to their communities (“Independent Sector,” 2012).

Service-Learning and Social Responsibility

Nationally, the Extension Master Gardener program can be considered a type of service-learning program. Service-learning is a well-thought out and organized experience where the participant takes part in learning and performs service in the community to expand on that learning (Eyler, 2002). The PMG Program can be considered a type of service-learning because participants are required to complete an educational training portion and perform volunteer service in the community as an extension of what was learned. These two aspects are integrated and interrelated as requirements of the program.

While service-learning is conducted most often with traditional students and most of the research conducted has focused on traditional students, it is an educational strategy that can be conducted with non-traditional adult students as well (Smith, 2008). Service-learning is a method of teaching that is often promoted because it is believed to help foster or increase social responsibility, especially in students (Smith, 2008).

Social responsibility can manifest itself in many ways, but a distinct definition exists. The norm of social responsibility states that people should help those who are dependent upon them (Berkowitz & Daniels, 1964). Based on the norm of social responsibility and the purposes of this study, social responsibility is defined as *the belief that one has an obligation to help others and society* (Berkowitz & Daniels, 1964).

There are many reasons why service-learning may increase or foster social responsibility (Rosenberg, McKeon, & Dinero, 1999; Wilson & Musick, 1999). Service-learning may increase social responsibility by expanding the participants' awareness of the social problems around them (Rosenberg et al., 1999). According to Wilson and Musick (1999), service-learning may also lead to an increase in volunteering behaviors due to the benefits the participants gain through the experience. The personal benefits, such as increased well-being, satisfaction, or confidence, gained through volunteering in a service-learning program may encourage participants to want to gain those same benefits again; as a result they may volunteer again.

Depending upon the structure of the service-learning program, social responsibility may or may not be explicitly encouraged or discussed. Fostering social responsibility of participants is not a distinct goal of the PMG Program. Participants are required to participate in volunteer service (Purdue Master Gardener Program State

Advisory Committee, 2010). The volunteering time that a participant must complete may indirectly increase social responsibility as it has been measured in students (Smith, 2008). This could happen for a number of reasons but is beyond the scope of this study.

Volunteering and Volunteering Behaviors

Various manifestations of social responsibility exist as there are many ways to help others. Volunteering is generally considered to be one aspect of socially responsible behavior. Volunteering behavior is also an aspect of any service-learning program as each participant completes volunteer time (Eyler, 2002). Within the PMG Program, participants must complete a specific amount of volunteer time to either gain or maintain certification (Purdue Master Gardener Program State Advisory Committee, 2010).

Volunteering and volunteering behaviors have been studied extensively with much variance in results and conclusions. Many definitions of volunteering exist and much debate exists around a distinct definition of volunteering (Wilson, 2000). For many, volunteering is any activity in which time is given freely to benefit another person, group, or cause (Wilson, 2000). According to Penner (2002), volunteering is defined as “a long-term, planned, and discretionary pro-social behavior that benefits strangers and occurs within an organizational context.” There are; however, omissions from the definition important to mention.

Many definitions of volunteering exclude both caring and helping behaviors (Wilson, 2000). There is much debate in the literature about whether or not these

behaviors should be considered volunteering. Assistance of a friend or family member is considered a caring behavior (Snyder & Omoto, 1992). For instance, the behaviors that involve caring for a loved one or friend that someone may feel a moral obligation to care for are oftentimes omitted from the definition of volunteering (Wilson, 2000). According to Finkelstein, Penner, and Brannick (2005) helping behaviors such as bystander intervention (administering CPR or helping someone in a car wreck) should not be considered volunteering because they are most often done spontaneously. Some classify driving an elderly neighbor to the doctor as a helping behavior (Cnaan & Amroffell, 1994) and believe it should be included as volunteering (Wilson, 2000).

According to Wilson (2000), the confines of volunteering behaviors do not mean that volunteers cannot benefit from their work. However, volunteers are not paid for their work (Warburton & Terry, 2000; Wilson & Musick, 1999).

Through the literature, a comprehensive definition was formed for use in this study. For the purpose of this study, volunteering is defined as *actively giving of your time or resources to your community or someone other than a friend or family member and without monetary compensation* (Snyder & Omoto, 1992; Warburton & Terry, 2000; Wilson & Musick, 1999; Wilson, 2000). Excluded are those caring behaviors someone may feel an obligation to provide (Wilson, 2000). Helping behaviors are not explicitly excluded. Money given to charitable organizations is, however, excluded within this study.

Definitions

1. Service-learning- a well-thought out and organized experience where the participant takes part in learning and performs service in the community to expand on that learning (Eyler, 2002)
2. Social responsibility- the belief that one has an obligation to help others and society (Berkowitz & Daniels, 1964)
3. Volunteering- actively giving of your time or resources to your community or someone other than a friend or family member and without monetary compensation (Snyder & Omoto, 1992; Warburton & Terry, 2000; Wilson & Musick, 1999; Wilson, 2000)
4. Self-efficacy- is the belief that a person has of his or her capability of performing a particular behavior (Bandura, 1986; Bandura, 1989)

Purpose

The purpose of this study is to identify potentially predictive variables of volunteering behaviors of Purdue Master Gardener Interns and Master Gardeners and describe characteristics and perceptions of participants in the Purdue Master Gardener Program.

Research Questions

Research Question #1- Characteristics and perceptions of the Purdue Master Gardener

Program participants

- 1a. What are the demographic characteristics of Purdue Master Gardener Interns and Master Gardeners?
- 1b. How did the participants of the Purdue Master Gardener Program (Pre-Intern) perceive the experience of the Educational Training?

Research Question #2- What are the relationships between potentially predictive variables and volunteering behaviors, as measured by total volunteer hours per month, of Purdue Master Gardener Interns and Master Gardeners?

Research Question #3- What are the relationships among potentially predictive variables?

Research Question #4- What variables potentially predict volunteering behaviors, as measured by total volunteer hours per month, of Purdue Master Gardener Interns and Master Gardeners?

Review of Literature

In order to address the purpose and research questions in this study, a conceptual framework was adopted, based upon the Theory of Planned Behavior (Ajzen, 1991). Included within this conceptual framework are the potentially predictive variables of

demographics, attitudes, self-efficacy, participation in the Purdue Master Gardener Program, and prior volunteering experience.

Theoretical Framework

The Theory of Planned Behavior (TPB) was chosen because it attempts to explain and predict behaviors (Ajzen, 1991) and takes into account the factors of attitudes and self-efficacy in the prediction of a behavior; in this case, volunteer behavior. Throughout the literature, TPB has been used extensively in the prediction of volunteer behaviors (Greenslade & White, 2005; Okun & Sloane, 2002; Warburton & Terry, 2000). Refer to Figure 1.

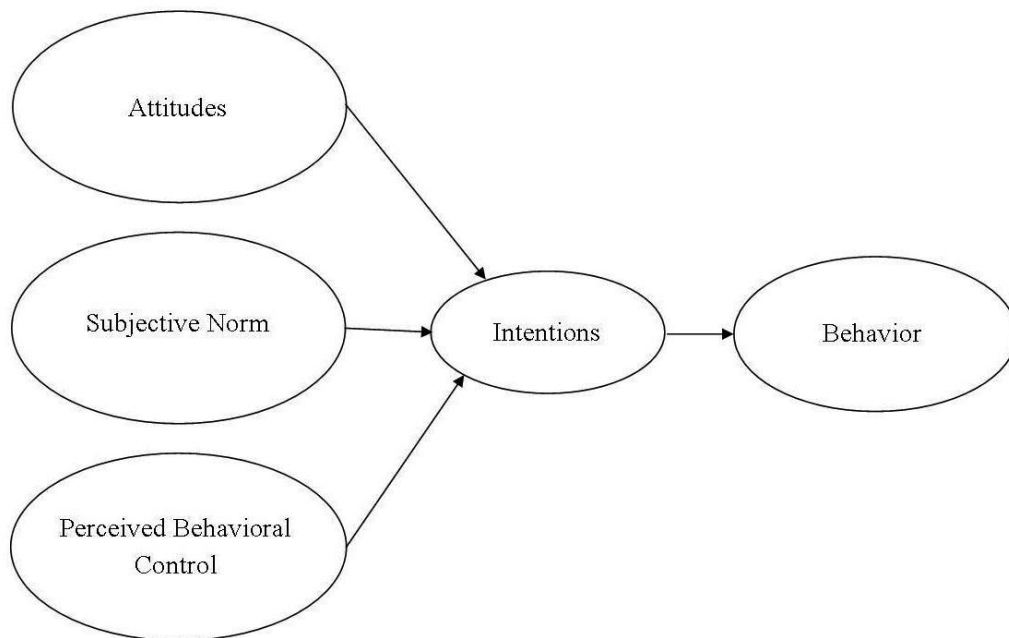


Figure 1. Diagrammatic illustration on the Theory of Planned Behavior (Ajzen, 1991)

Planned behavior, according to the Theory of Planned Behavior (Ajzen, 1991), can be gauged by three variables: attitude toward the behavior, subjective norm, and perceived behavioral control. All of these variables lead toward intention which leads toward behavior; behaviors are mediated through intentions (Ajzen, 1991; Conner & Armitage, 2006; Fishbein & Ajzen, 2010). Attitude towards a behavior can be determined by a person's behavioral beliefs, and also by how strongly he or she feels about the behavior (Ajzen, 1991; Conner & Armitage, 1998; Fishbein & Ajzen, 2010). If someone does not feel very strongly about a certain belief, then he or she may be easily swayed by others (Ajzen, 1991; Conner & Armitage, 1998; Fishbein & Ajzen, 2010). Behaviors are also impacted by the expected beliefs of people in an individual's primary group and an individual's desire to be accepted by others, which is termed the subjective norm (Ajzen, 1991; Conner & Armitage, 1998; Fishbein & Ajzen, 2010). Control beliefs, an individual's perceived presence of factors that may impede the ability to engage in a certain behavior, along with a person's perceived power over those control factors determine the perceived behavioral control (Ajzen, 1991; Ajzen, 2002; Conner & Armitage, 1998; Fishbein & Ajzen, 2010). An assumption made in using the Theory of Planned Behavior is that the individual will have the ability to choose at will to engage in a particular behavior (Ajzen, 1991).

Perceived behavioral control is based upon the concept of self-efficacy. Self-efficacy (Bandura, 1986; Bandura, 1989) is the belief that a person has of his or her capability of performing a particular behavior. It refers to an individual's belief in his or

her competence. Perceived behavioral control refers to self-efficacy in respect to a behavior, while considering the control an individual has over performing the behavior (Ajzen, 1991; Ajzen, 2002; Fishbein & Ajzen, 2010). In other words, perceived behavioral control encompasses control factors such as time availability, individual's perception of skills needed to perform the behavior, and whether or not there is a possible solution.

In order to identify potentially predictive variables to volunteering behaviors of Purdue Master Gardeners, the factors of the TPB must be evaluated within the context of the PMG Program. The planned behavior of volunteering may be affected by many factors. A person's attitudes about social responsibility and volunteering could affect if or how much a person volunteers. The perceived behavioral control that a person has is also very important. Perceived lack of time or perceived lack of skills are controls that may prohibit a person from volunteering.

Conceptual Framework

Multiple variables may help to predict volunteer behaviors in Purdue Master Gardener Interns and Master Gardeners. Demographics, attitudes, self-efficacy, participation in the Purdue Master Gardener Program, and prior volunteering experience may all help to predict volunteer behaviors of Purdue Master Gardener Interns and Master Gardeners.

Demographic variables are included in the conceptual model as possible predictors to volunteer behavior of Purdue Master Gardeners. Attitudes about a citizen's responsibility to volunteer and an individual's responsibility to volunteer are included in the conceptual model. Attitudes about volunteering may account for some variance in

self-reported average of Purdue Master Gardeners' volunteer hours per month. The self-efficacy, or confidence in one's abilities to volunteer (Bandura, 1986; Bandura, 1989), may influence volunteering behaviors. Self-efficacy of capacity to volunteer and ability to make a positive impact may account for variance in volunteering behaviors. While an individual may be confident in his or her ability to garden, but not volunteer, self-efficacy to garden was not measured in this study. Self-reported hours of previous volunteering may relate to total hours of volunteering per month. The activities participated in may include different organizations with which one volunteered, service-learning experiences, volunteering as a child or young adult, or observed positive associations about volunteering from an adult. Each of these factors may impact total volunteer hours per month. Participation in the PMG program (such as length of service in the program, or activities in which someone participated) may account for some variance in self-reported volunteering behaviors.

The conceptual model can be found in Figure 2.

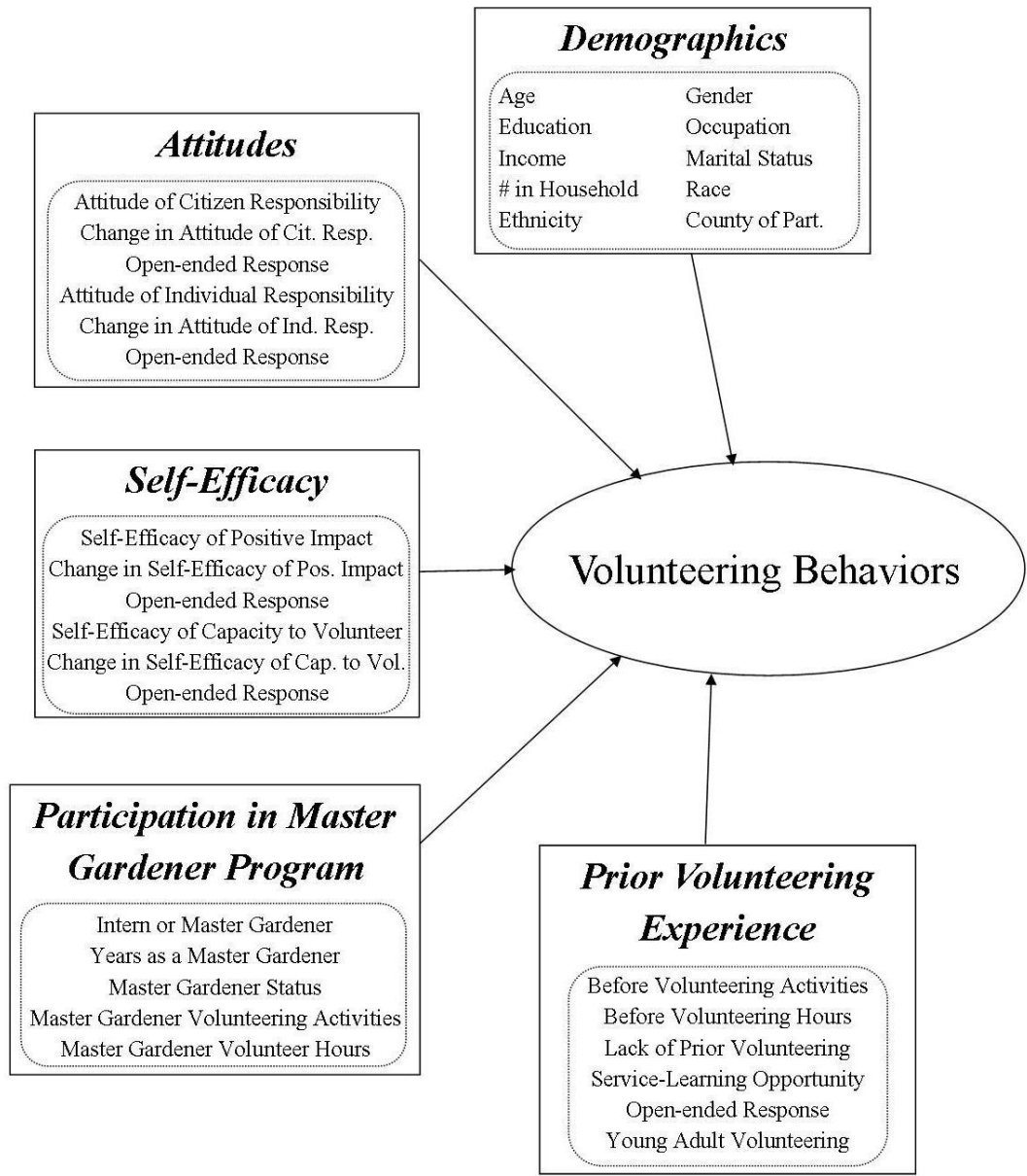


Figure 2. Diagrammatic illustration of conceptual framework of study

Variables in the Model

A gap exists in the research in that researchers are conducting studies to find a predictive variable or model that will predict volunteer behaviors in all contexts (Janoski,

Musick, & Wilson, 1998; Norman, 1975; Warburton & Terry, 2000). Wilson (2000) posits that volunteering is an expansive behavior that encompasses many different activities and changes so much throughout a person's life that one categorization is not possible or accurate. This indicates that volunteer behaviors must be studied within each individual context, and continually over time, to achieve an accurate assessment of the behavior, such as within the PMG Program.

Selection of variables for this study was based on a review of literature for those that have been consistently measured as possible predictors to volunteer behaviors. This study combines many of those variables found across the pertinent literature into one conceptual model. These variables include demographics, attitudes, self-efficacy, participation in the PMG Program, and prior volunteering experience.

Demographics

Demographic variables have been shown to be predictors of volunteering behaviors (Wilson, 2000; Tang, 2006). Demographic variables include gender, age, race, ethnicity, income, marital status, occupation, level of education, and number of people in household. There are so many different contexts in which someone may volunteer. Therefore, it is necessary to use context-specific demographic variables such as those within the PMG Program. By using context-specific demographic variables, results may be better utilized for future populations within the PMG program.

Different demographic variables have different predictive abilities. Education has been shown to be a consistent predictor of volunteering behaviors in multiple contexts

(McPherson & Rotolo, 1996; Sundeen & Raskoff, 1994; Wilson & Musick, 1999). One reason for education being a strong predictor of volunteering behavior in many contexts may be because education expands people's view of the social problems that exist (Brady, Schlozman, & Verba, 1999; Rosenthal et al, 1998). Another reason education is a strong predictor may be that people who are more highly educated also tend to belong to more organizations (Herzog & Morgan, 1993) and may be asked to volunteer more often (Brady et al., 1999).

Gender can predict who may volunteer more for a particular type of volunteering behavior. For example, women are more likely to volunteer in caring or person-to-person roles and men are more likely to volunteer in the political sector (Wilson, 2000).

Age is a demographic variable that, in some contexts, can predict volunteering behaviors (Wilson, 2000; Tang, 2006). As people get older, occupation (or lack of occupation) may be correlated with age as individuals leave the work force and enter retirement. Some research has shown that volunteering increases with retirement, but this has not been shown consistently. While time available to volunteer has increased, exposure to volunteering opportunities has decreased if an individual is not involved in the social groups that were bringing up these opportunities (Einolf, 2008). Volunteering seems to fluctuate throughout a person's lifetime as his or her roles change both in the workforce and the home (Van Willigen, 2000).

Attitudes

Attitudes are variables often measured in an attempt to predict behaviors. Attitude is defined as "a latent disposition or tendency to respond with some degree of favorableness or unfavorableness to a psychological object" (Fishbein & Ajzen, 2010).

Attitudes about volunteering behaviors may include items such as attitudes about a person's individual responsibility to volunteer. Attitudes are included in the Theory of Planned Behavior (Ajzen, 1991). According to the theory, attitudes are a precedent to behaviors and may predict behaviors. Most research has found that volunteering behaviors were not consistently predicted by attitudes about volunteering (Wilson, 2000). Wilson (2000) states that values (attitudes) fail to predict volunteering, possibly because there are so many different contexts of volunteering and because different values (attitudes) influence volunteering in each different context.

Norman (1975) posits that when attitudes are combined in research with other variables, they have a stronger predictive ability than when measured alone. Norman states that the "other variables" approaches have made important impacts on the field.

Measuring attitudes about volunteering is a measure of a person's social responsibility. Social responsibility is an individual's belief that one should help those who need it (Berkowitz & Daniels, 1964). That social responsibility can manifest itself as attitudes about volunteering. Attitudes, within the conceptual model, are divided into two main ideas.

Attitudes about a citizen's responsibility to volunteer refer to whether or not someone feels that all people within a community or society have a responsibility to volunteer. Attitudes about an individual's responsibility to volunteer refer to whether or not someone feels the responsibility to perform volunteer service in the community.

Self-Efficacy

Perceived behavioral control, within the Theory of Planned Behavior (Ajzen, 1991), is based upon self-efficacy, one's own belief in his or her ability to succeed in certain situations (Bandura, 1986; Bandura, 1989). The higher or stronger the self-efficacy, the more challenging a goal someone makes and the more committed he or she is to that goal (Bandura, 1989). If an individual feels one can be successful, then there is a greater likelihood that the person will engage in the behavior exhibited in that goal (Bandura, 1989).

The concept of self-efficacy can be applied in the context of volunteering behaviors (Weber, Weber, Sleeper, & Schneider, 2004). An individual most likely would not engage in a behavior or set a specific goal for oneself, if he or she did not feel success could be achieved in that situation (Bandura, 1986; Bandura, 1989). If a person has a higher self-efficacy towards volunteering behaviors, he or she may be more likely to engage in those behaviors. Weber et al. (2004) defines self-efficacy in the volunteering sector as a belief that one can make an impact on the community.

Self-efficacy has shown to be a strong predictor of behavior (Bandura, 1986; Bandura, 1989). When measured in the context of volunteering behaviors, some researchers have found that self-efficacy helps to predict volunteering behaviors (Weber et al., 2004). Perceived behavioral control of volunteering behaviors includes self-efficacy and control factors such as lack of time and perceived lack of skills.

Self-efficacy, within the conceptual model, is broken down into two main sections. Self-efficacy to make a positive impact refers to respondents' beliefs that they can make a positive impact within the community. Self-efficacy of capacity to volunteer

includes the control beliefs of perceived time or ability to make time and perceived available skills or capacity to learn those skills.

Participation in the Purdue Master Gardener Program

Participation in the program is also measured in the conceptual model.

Participation is defined as the “state of being related to a larger whole” (“Merriam-Webster- Participation- Definition,” 2012). Participation or involvement in a program can be considered within a hierarchy. Arnstein’s Ladder of Citizen Participation (1969) categorizes the amount of input and decision-making power a citizen has in a particular situation. Arnstein’s hierarchy of citizen participation varies from the participation being measured in this study, but it does provide a conceptualization of different hierarchies of participation that may be transferred to other contexts.

Hierarchies within a program may be variables such as number of years in a program and status (certification) within a program (if different status or certification options are available). Volunteering behaviors may be predicted based upon where a person lies on the hierarchy in regards to years or status (certification) in the program. Years or status (certification) in the program may be able to discriminate between varying volunteer behaviors. Differing degrees of volunteering behaviors may be predicted by different degrees of participation in the program.

No studies have been found that measure volunteering behaviors with length of service as an independent, predictive variable. Participation in the program is included as a potentially predictive variable in the conceptual model in this study.

Prior Volunteering Experience

Prior volunteering experience is measured in the conceptual model. There are many quantifications of prior volunteering experience such as whether or not the individual volunteered before, the type of volunteering activities participated in, such as service-learning programs, and if someone volunteered as a child or young adult.

Whether or not an individual volunteered in the past may help to predict volunteering behavior. According to Janoski, Musick, and Wilson (1998), respondents were asked twice over a ten year period if they had volunteered to help solve a community problem. The study found that past volunteering does help to predict future volunteering. Among the elderly, past volunteering was found to be a strong predictor of the respondent's future volunteering (Mutchler, Burr, & Caro, 2003). Mutchler et al. (2003) found that of the older volunteers who reported volunteering in the first measure of the study, 75% were found to still be volunteering three years later.

There is some research supporting the idea that adolescents who volunteer may also volunteer more when they are adults (Janoski et al., 1998). Janoski et al. (1998) found that if an adolescent has formed positive attitudes about volunteering, that adolescent is more likely to volunteer later in life. This study found that this phenomenon is limited to those who formed the attitude during adolescence and not due simply to the exposure and participation in volunteering. Planty et al. (2006) found that 42% of students who volunteered in high school also volunteered as young adults.

For some adolescents, exposure to talk about the importance of volunteering or seeing someone they admire or respect volunteer can still have a positive impact, even if the adolescent did not participate in volunteering. Either observing a parent or adult role model volunteering or hearing positive associations with volunteering from that parent or adult role model, may help to predict volunteering as an adult (Hamilton & Fenzel, 1988). Children whose parents have instilled within them attentiveness to the needs of others, may have a greater propensity to volunteer (Hamilton & Fenzel, 1988).

Both adolescents and adults may be exposed to volunteering through service-learning opportunities. Participation in that service-learning experience may predict volunteering behavior. Several studies have found that individuals who participate in service-learning programs are more prone to volunteer (Smith, 2008; Wilson & Musick, 1999). According to Smith (2008), service-learning is believed to help foster or increase social responsibility. According to Wilson and Musick (1999), service-learning may lead to an increase in volunteering behaviors. Many of the studies conducted have been limited in scope and contextualized, so as not to be generalizable to other populations.

Another aspect of prior volunteering experience is whether or not an individual has volunteered through an employer. An increasing trend with employers is to provide support for and encourage volunteering by their employees (Tangri, 2011). While volunteering that is required or for which an individual is paid does not fall under the definition of volunteering used in this study, it provides an opportunity to categorize prior volunteering experience of an individual. Tangri (2011) discusses the benefits of this phenomenon, such as, increased skills for use in the workplace, but no studies were found that discuss this aspect of prior volunteer experience as a predictor to volunteering

behaviors. The experience of volunteering as a requirement for an employer is measured in this study as a potential predictor to volunteering behavior on one's own personal time.

Educational Training Evaluation

An additional portion of the study is the educational training evaluation section. Many definitions and uses exist, but Worthen, Sanders, and Fitzpatrick (1997) define evaluation as determining “the worth or merit of the object being evaluated.” It is also a way to gauge what participants thought about the educational training or program. Evaluation is very important for moving a program forward because situational and cultural changes within the context of the program, necessitate evaluation on a consistent basis and lead to an eventual evolution of the program (Worthen et al., 1997).

Regardless of the program, evaluation is very important to understanding where the program is at a given point in time. Evaluation is also contextualized; the type of evaluation used in one context may not be appropriate in another (Worthen et al., 1997). It is similar to taking a “snapshot” of a program. Evaluation of the educational training can highlight attributes from the current participants at the present time.

Educational training evaluation can include many items such as perception of logistics of the class sessions (e.g., if the time of day worked or if the facilities were acceptable), if the educational training or program was worth the participants' time and money (if a fee was included), and what was learned or what behaviors were impacted or changed through participation in the educational training or program. The above list is

not exhaustive, but provides an overview of perceptions and attributes of a program that are important to evaluate on a consistent basis.

Similar Studies

The research on volunteering behaviors includes a large focus on motivations to volunteer as a predictive variable. The research on motivation to volunteer attempts to break down those motivations into different categories to better understand why people volunteer and how best to recruit and retain volunteers (Finkelstein et al., 2005; Greenslade & White, 2005). The theory of Functional Analysis (Clary & Snyder, 1991) holds that people volunteer to satisfy one or more of six motives: Values (related to altruistic concerns for others), Understanding (to gain new learning experiences), Social (to strengthen relationships), Career (to gain skills to advance career development), Protective (reduce negative feelings of oneself), and Enhancement (to grow and develop).

Motivations differ from the potentially predictive variables measured in this study. Motivations are what an individual thinks he or she will get out of the experience and can be either intrinsic or extrinsic. Ryan and Deci (2000) defined both intrinsic and extrinsic motivation. Intrinsic motivation refers to the activities in which pleasure is inherent in the activity itself and extrinsic motivation refers to the motivation that comes from outside the learner. Motivations are either inherent tendencies on the part of the person, such as the desire to gain or improve skills related to career development, or extrinsic rewards, such as, a free lunch or volunteer recognition that may come from

participating in the experience (Ryan & Deci, 2000). The potentially predictive variables to volunteering behaviors, as measured in this study, refer to characteristics such as demographic variables, attitudes within oneself, confidence in one's abilities, level of participation, and past behaviors.

A strong correlation between attitudes and volunteering behavior has not been shown within studies to identify predictive variables to volunteering behaviors. Janoski et al. (1998) measured the change in variables, such as pro-social attitudes and political efficacy across time and also measured whether or not there was an increase in time spent volunteering across that same interval of time. Correlations within and among variables were considered. Pro-social attitudes were found to have weak correlations to volunteering behaviors (.32 and .15).

Most often in the volunteering context, perceived behavioral control is measured instead of self-efficacy (Greenslade & White, 2005; Okun & Sloane, 2002; Warburton & Terry, 2000), as the Theory of Planned Behavior (Ajzen, 1991) is used often in the measure of volunteering behaviors. Some researchers insist on a distinction between the two constructs, though there is much confusion between the definitions of each. Self-efficacy is one's belief that he or she can succeed in a particular situation or in a particular behavior (Bandura, 1986; Bandura, 1989), while perceived behavioral control is the control someone feels he or she has over the performance of a behavior and the self-efficacy of a particular behavior within a context (Fishbein & Ajzen, 2010).

There may also be confusion when developing an instrument to measure either of the constructs of self-efficacy or perceived behavioral control. While a study may state it is measuring perceived behavioral control, it could be measuring self-efficacy instead.

Perceived behavioral control has not been found to be a strong predictor in related studies (Greenslade & White, 2005; Warburton & Terry, 2000). Greenslade and White (2005) conducted a study with a welfare organization in Australia measuring predictive variables within the Theory of Planned Behavior (Ajzen, 1991) and self-reported volunteering behavior a month later. In this study, perceived behavioral control was not a significant predictor of volunteering behaviors.

Warburton and Terry (2000) posited that one reason perceived behavioral control did not directly influence volunteering behaviors is that it may not have been conceptually clear what perceived behavioral control is. After the study was complete, Warburton and Terry (2000) came to the conclusion that two of the items that were attributed to perceived behavioral control were self-efficacy.

Participation in the program (length of service) has been studied as a dependent variable, but not as an independent variable. Finkelstein, Penner, and Brannick (2005) studied time and length of service as predicted by Functional Analysis and Role Identity Models. The Functional Analysis model posits that individuals volunteer to satisfy one or more of six motives: Values, Understanding, Social, Career, Protective, and Enhancement. The Role Identity model (Charng, Piliavin, & Callero, 1988) posits that individuals assume multiple roles and after repeated participation in each role, the role is internalized and becomes an aspect of oneself or an identity. One of these roles may be that of volunteer.

A focus on either one or two predictive variables is common throughout most of the research on identification of predictive variables to volunteering behaviors. Combining multiple potentially predictive variables, within the current study, may be

more effective in predicting volunteer behaviors. As posited by Norman (1975), attitudes may have a stronger predictive ability when measured in conjunction with multiple predictive variables. In other words, no one variable can predict volunteering behaviors, but multiple variables have the possibility to effectively predict volunteering behaviors.

Some studies simply ask the respondents if they volunteer and try to identify predictive variables to that volunteering behavior (Warburton & Terry, 2000). The variables might be the same as this current study, but without measuring the variables within a context, they are not likely to have strong correlations. For example, Warburton and Terry (2000) measured the predictive abilities of variables within the Theory of Planned Behavior with a random sample of men and women living in one city.

Research in the national Extension Master Gardener Program has often been conducted to serve practical purposes for the program such as recruiting and retaining volunteers within Extension programs including Extension Master Gardeners. This includes measures such as motivation to participate, perceived benefits of the program, and how participants fulfill volunteering requirements (Boyer et al., 2002; Mayfield & Theodori, 2006; Schrock et al., 2000; Strong & Harder, 2010; Swackhamer & Kiernan, 2005; Wolford, Cox, & Culp III, 2001).

The desire for an increase in horticultural knowledge is the most often reported motivation within the research on motivations to participate in the national Extension Master Gardener Program (Schrock et al., 2000; Strong & Harder, 2010). Another component of the literature focuses on perceived benefits of the Extension Master Gardener Program. A study by Swackhamer and Kiernan (2005) found that participants experience an increase in horticultural knowledge and efficacy for fielding questions on

certain topics, but did not measure efficacy to volunteer. Schrock et al. (2000) also found that increased understanding and knowledge were the two highest reported benefits of participating in the program.

Boyer et al. (2002) studied whether or not participants perceived or reported any other benefits besides an increase in horticultural knowledge, as is cited most often in the literature (Swackhamer & Kiernan, 2005). Boyer et al. (2002) found a perceived improvement in physical and social activity, self-esteem, and nutrition of Texas Master Gardener Program participants.

Mayfield and Theodori (2006) explored how Master Gardeners fulfill their volunteering requirements to promote development of community. Some of the activities with which Master Gardeners participated were answering calls, landscaping projects, and youth gardening programs. This study focused solely on where Master Gardeners volunteer to help fulfill their required hours, but does not explore in what other organizations or contexts a Master Gardener volunteers, aside from requirements of Master Gardener hours.

In a study with Ohio State University Extension, Master volunteers (Master Money Managers, Master Food Preservers, Master Gardeners, and 4-H International County Coordinators) were asked how many organizations they volunteered with outside the arena of Extension (Wolford, Cox, & Culp III, 2001). The respondents averaged 2.6 organizations outside Extension with which respondents volunteered. A limitation to the above study is that it does not explore any changes in volunteer behavior after the experience of participation in the program. Another limitation is that the study is not

restricted to the Master Gardener Program, but includes volunteering behavior from other Master volunteer programs.

Rohs and Westerfield (1996) measured individual volunteering behavior in the Master Gardener Program as related to age, having children, influence of garden club member, influence of community leader, influence of neighbor, whether parents were volunteers, perceived personal benefits, and perceived societal value of the Master Gardener Program. Results indicated that an older respondent, those who are married, and those who are employed in sales or middle management are more likely to volunteer more hours. The greater the personal benefits of the program perceived by the respondent, the greater the likelihood of more hours spent volunteering. Positive associations with and influences by neighbors or community leaders were also found to lead to larger numbers of hours spent volunteering.

The researchers conducted stepwise regression analysis to create a predictive model to identify variables that may predict whether or not an individual volunteers with the Master Gardener Program. The results of the study indicated that 34% of the variance in the dependent variable was accounted for by the eight potentially predictive variables.

Similar to the study conducted for this research, Rohs and Westerfield (1996) chose to measure multiple potentially predictive variables within one context. One limitation of the Rohs and Westerfield (1996) study is that it measures whether or not an individual volunteers, but not how many hours the Master Gardener volunteers as it relates to the predictive model. This study also differs from the current study in that it measures volunteering behavior only within the context of the Master Gardener Program and did not include overall volunteering behavior of the individual.

Summary

The creation of a predictive model, guided by the Theory of Planned Behavior and the conceptual model, and based on the combination of demographics, attitudes, self-efficacy, participation in the Purdue Master Gardener program, and prior volunteering experience may allow this study to fill a gap in the literature on predictors of volunteering behavior. This study will also add to the literature on the national Extension Master Gardener Program and the Purdue Master Gardener Program by describing the demographics of Purdue Master Gardener Interns and Master Gardeners and describing the characteristics and participant perceptions of the PMG Program.

List of References

About the Purdue Master Gardener Program. (2012). Retrieved April 24, 2012, from <http://www.hort.purdue.edu/mg/about.html>

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211. doi: 10.1016/0749-5978(91)90020-T

Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology*, 32(4), 665-683.

Arnstein, S. R. (1969). A ladder of citizen participation. *Journal of the American Institute of Planners*, 35(4), 216-224.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist*, 44(9), 1175-1184. doi: 10.1037/0003-066X.44.9.1175

Become a Purdue Master Gardener. (2008). [Brochure]. West Lafayette, IN.

- Berkowitz, L., & Daniels, L. R. (1964). Affecting the salience of the social responsibility norm: Effects of past help on the response to dependency relationships. *The Journal of Abnormal and Social Psychology, 68*(3), 275-281. doi: 10.1037/h0040164
- Bobbitt, V. (1997). The Washington State University Master Gardener Program: Cultivating plants, people, and communities for 25 years. *Hort Technology, 7*(4), 345-347.
- Boyer, R., Waliczek, T. M., & Zajicek, J. M. (2002). The master gardener program: Do benefits of the program go beyond improving the horticultural knowledge of the participants? *Hort Technology, 12*(3), 432-436.
- Brady, H. E., Schlozman, K. L., & Verba, S. (1999). Prospecting for participants: Rational expectations and the recruitment of political activists. *The American Political Science Review, 93*(1), 153-169.
- Chalker-Scott, L., & Collman, S. J. (2006). Washington State's Master Gardener Program: 30 years of leadership in university-sponsored, volunteer-coordinated, sustainable community horticulture. *Journal of Cleaner Production, 14*(9-11), 988-993.

- Chamberlain, J. (1982). *A description of the master gardener program in Indiana* (Unpublished master's thesis). Purdue University.
- Charng, H., Piliavin, J. A., & Callero, P. L. (1988). Role identity and reasoned action in the prediction of repeated behavior. *Social Psychology Quarterly*, *51*(4), 303-317.
- Clary, E. G., & Snyder, M. (1991). A functional analysis of altruism and prosocial behavior: The case of volunteerism. *Review of Personality and Social Psychology*, *12*, 119-148.
- Cnaan, R., & Amroffell, L. (1994). Mapping volunteer activity. *Nonprofit Volunteering Sector Quarterly*, *23*, 335-354.
- Conner, M., & Armitage, C. J. (1998). Extending the theory of planned behavior: A review and avenues of further research. *Journal of Applied Social Psychology*, *15*, 1429-1464.
- Corporation for National and Community Service. (2012, March 29). Retrieved February 12, 2012, from <http://www.nationalservice.gov>

- Dana, M., Lerner, R., Kemery, R., Shaner, G., Whitford, F., Gibb, T., & Gann, R. (1993). Pesticide information, attitudes, and use by the master gardeners of Indiana. *Hort Science*, 28(5), 524.
- Einolf, C. J. (2008). Will the boomers volunteer during retirement? Comparing the baby boom, silent, and long civic cohorts. *Nonprofit and Voluntary Sector Quarterly*, 38(2), 181-199. doi: 10.1177/0899764008315182
- Eyler, J. (2002). Reflection: Linking service and learning- linking students and communities. *Journal of Social Issues*, 58(3), 517-533.
- Finkelstein, M. A., Penner, L. A., & Brannick, M. T. (2005). Motive, role identity, and prosocial personality as predictors of volunteer activity. *Social Behavior and Personality*, 33(4), 403-418. doi: 10.2224/sbp.2005.33.4.403
- Fishbein, M., & Ajzen, I. (2010). *Predicting and changing behavior: The reasoned action approach*. New York, NY: Psychology Press.
- Greenslade, J. H., & White, K. M. (2005). The prediction of above-average participation in volunteerism: A test of the theory of planned behavior and the volunteers functions inventory in older Australian adults. *The Journal of Social Psychology*, 145(2), 155-172.

- Hamilton, S. F., & Fenzel, L. M. (1988). The impact of volunteer experience on adolescent social development: Evidence of program effects. *Journal of Adolescent Research*, 3(1), 65-80. doi: 10.1177/074355488831006
- Herzog, A., & Morgan, J. (1993). Formal volunteer work among older Americans. In S. Bass, F. Caro, & Y. Chen (Eds.), *Achieving a productive aging society* (pp. 119-142). Westport, CT: Auburn House.
- Independent Sector. (2012). Independent sector. *Independent Sector*. Retrieved May 16, 2012, from <http://www.independentsector.org/>
- Janoski, T., Musick, M., & Wilson, J. (1998). Being volunteered? The impact of social participation and pro-social attitudes on volunteering. *Sociological Forum*, 13(3), 495-519.
- Kirsch, E., & VanDerZanden, A. M. (2002). Demographics and volunteer experiences of Oregon Master Gardeners. *Hort Technology*, 12(3), 505-508.
- Lerner, R. (2012, January 30). Gall Committee Meeting [E-mail to the author].
- Lerner, R. (2012, January 18). MG handbook resource [E-mail to the author].

- Mayfield, C. A., & Theodori, G. L. (2006). Past and anticipated community involvement of Master Gardener trainees. *Journal of Extension*, 44(3). Retrieved from www.joe.org
- McPherson, J., & Rotolo, T. (1996). Testing a dynamic model of social composition: Diversity and change in voluntary groups. *American Sociological Review*, 61(2), 179-202.
- Merriam-Webster Participation (2012). *Merriam-Webster*. Retrieved February 18, 2012, from <http://www.merriam-webster.com/dictionary/participation>
- Meyer, M. (2004). Why Master Gardeners stop volunteering: Lack of time. *Hort Technology*, 14(3), 437-438.
- Meyer, M. (2007). The Master Gardener program 1972-2005. *Horticultural Reviews*, 33, 393-420.
- Mutchler, J. E., Burr, J. A., & Caro, F. G. (2003). From paid worker to volunteer: Leaving the paid work-force and volunteering in later life. *Social Forces*, 81(4), 1267-1293.
- National Gardening Association. (2011) . *National Gardening Survey* (pp. 1-162, Rep.). South Burlington, VT.

- Norman, R. (1975). Affective-cognitive consistency, attitudes, conformity, and behavior. *Journal of Personality and Social Psychology*, 32(1), 83-91.
- Okun, M. A., & Sloane, E. S. (2002). Application of planned behavior theory to predicting volunteer enrollment by college students in a campus-based program. *Social Behavior and Personality*, 30(3), 243-250.
- Park, S., Shoemaker, C. A., & Haub, M. D. (2009). Physical and psychological health conditions of older adults classified as gardeners or nongardeners. *Hort Science*, 44(1), 206-210.
- Penner, L. A. (2002). Dispositional and organizational influences on volunteerism: An interactionist perspective on sustained. *Journal of Social Issues*, 58, 447-467.
- Planty, M., Bozick, R., & Regnier, M. (2006). Helping because you have to or helping because you want to? sustaining participation in service work from adolescence through young adulthood. *Youth & Society*, 38(2), 177-202. doi: 10.1177/0044118X06287961
- Purdue Master Gardener Intern Training Opportunities. (2012). Retrieved April 24, 2012, from http://www.hort.purdue.edu/mg/basic_training.html

Purdue Master Gardener Program State Advisory Committee. (2010, November).

Purdue Master Gardener Program Policies. Purdue University, West Lafayette, IN.

Relf, D., & McDaniel, A. (1994). Assessing Master Gardener's priorities. *Hort Technology*, 4(2), 181-184.

Rohs, F. R., & Westerfield, R. R. (1996). Factors influencing volunteering in the Master Gardener Program. *Hort Technology*, 6(3), 281-285.

Rohs, F. R., Stribling, J. H., & Westerfield, R. R. (2002). What personally attracts volunteers to the Master Gardener program? *Journal of Extension*, 40(4). Retrieved from www.joe.org

Rosenberg, S. L., McKeon, L. M., & Dinero, T. E. (1999). Positive peer solutions: One answer for the rejected student. *Phi Delta Kappan*, 81(2), 114-118.

Rosenthal, S., Feiring, C., & Lewis, M. (1998). Political volunteering from late adolescence to young adulthood. *Journal of Social Issues*, 54(3), 477-493. doi: 10.1111/j.1540-4560.1998.tb01231.x

Ruppert, K. C., Bradshaw, J., & Stewart, A. Z. (1997). The Florida Master Gardener Program: History, use, and trends. *Hort Technology*, 7(4), 348-353.

- Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology, 25*(1), 54-67.
- Schrock, D. S., Meyer, M., Ascher, P., & Snyder, M. (1999). Missouri Master Gardener demographics. *Journal of Extension, 37*(5). Retrieved from www.joe.org
- Schrock, D. S., Meyer, M., Ascher, P., & Snyder, M. (2000). Benefits and values of the Master Gardener program. *Journal of Extension, 38*(1). Retrieved from www.joe.org
- Schrock, D. S., Meyer, M., Ascher, P., & Snyder, M. (2000). Reasons for becoming involved as a Master Gardener. *Hort Technology, 10*(3), 626-630.
- Smith, M. C. (2008). Does service learning promote adult development? Theoretical perspectives and directions for research. *New Directions for Adult and Continuing Education, (118)*, 5-15. doi: 10.1002/ace.291
- Snyder, M., & Omoto, A. (1992). Who helps and why? The psychology of AIDS volunteerism. *Helping and Being Helped, 213-239*.
- Stouse, L., & Marr, C. (1992). Retaining Master Gardener volunteers. *Hort Technology, 2*(2), 244-245.

- Strong, R., & Harder, A. (2010). Motivational orientations of adults participating in a Cooperative Extension Master Gardener program. *Journal of Extension*, 8(4). Retrieved from www.joe.org
- Sundeen, R. A., & Raskoff, S. A. (1994). Volunteering among teenagers in the United States. *Nonprofit Volunteer Sector Quarterly*, 23(4), 383-403. doi: 10.1177/089976402300407
- Swackhamer, E., & Kiernan, N. E. (2005). A multipurpose evaluation strategy for Master Gardener training programs. *Journal of Extension*, 43(6). Retrieved from www.joe.org
- Tang, F. (2006). What resources are needed for volunteerism? A life course perspective. *Journal of Applied Gerontology*, 25, 375-390. doi: 10.1177/0733464806292858
- Tangri, A. (2011). *Employee volunteering behavior* (Unpublished master's thesis). California State University. Retrieved March 4, 2012, from <http://cdspace.calstate.edu/xmlui/bitstream/handle/10211.9/1143/Employee%20Volunteering%20Behavior.pdf?sequence=1>

U.S. Congress (1914). Smith-Lever Act, Agricultural Extension Work Act. 63 P.L. 95;
63 Cong. Ch. 79; 38 Stat. 372.

Van Willigen, M. (2000). Differential benefits of volunteering across the life course.
Journal of Gerontology, 55B(5), 308-318.

Waliczek, T. M., Zajicek, J. M., & Lineberger, R. D. (2005). The influence of gardening
activities on consumer perceptions of life satisfaction. *Hort Science, 40(5)*, 1360
1365.

Warburton, J., & Terry, D. J. (2000). Volunteer decision making by older people: A test
of a revised theory of planned behavior. *Basic and Applied Social
Psychology, 22(3)*, 245-257. doi: 10.1207/S15324834BASP2203_11

Weber, P., Weber, J. E., Sleeper, B. J., & Schneider, K. C. (2004). Self-efficacy toward
service, civic participation, and the business student: Scale development and
validation. *Journal of Business Ethics, 49(4)*, 359-369.

Wilson, J. (2000). Volunteering. *Annual Review of Sociology, 26(1)*, 215-240. doi:
10.1146/annurev.soc.26.1.215

Wilson, J., & Musick, M. (1999). The effects of volunteering on the volunteer. *Law and
Contemporary Problems, 62(4)*, 141-168.

Wilson, J. C., & Newman, M. E. (2011). Reasons for volunteering as a Mississippi Master Gardener. *Journal of Extension*, 49(5). Retrieved from www.joe.org

Wolford, M., Cox, K., & Culp, III, K. (2001). Effective motivators for Master volunteer program development. *Journal of Extension*, 39(2). Retrieved from www.joe.org

Worthen, B. R., Sanders, J. R., & Fitzpatrick, J. L. (1997). Evaluation's basic purpose, uses, and conceptual distinctions. In V. L. Blanford (Ed.), *Program evaluation: Alternative approaches and practical guidelines* (2nd ed., pp. 3-24). New York, NY: Longman.

CHAPTER TWO: METHODS, RESULTS, AND CONCLUSIONS

Methods

A web-based questionnaire using Qualtrics® (Qualtrics Labs Inc., Provo, UT) was created to serve the research of potentially predictive variables to volunteer behaviors of Purdue Master Gardener Interns and Master Gardeners and describe the characteristics and perceptions of participants of the Purdue Master Gardener Program. The questionnaire was also used as an educational training evaluation tool to measure the experience of the program for Purdue Master Gardener Interns. Only the Purdue Master Gardener Interns completed this portion of the questionnaire because Interns have recently completed the educational training portion of the program.

Development of Questionnaire

A program evaluation tool for the PMG Program was previously developed by a Purdue Master Gardener Advisory Committee (Rosie Lerner, personal communication, March 19, 2012). This program evaluation tool helped to serve as the foundation for the development of the educational training portion of the questionnaire for this study. This program evaluation tool is provided for individual counties' administration immediately

after the educational training had been completed. The program evaluation tool can be found in Appendix C.

Within this program evaluation tool, no distinction was made between uses of the words class (educational training) and the PMG Program, but for the purposes of this study, distinctions will be made. The existing program evaluation tool includes questions about the impact of the educational training and what participants thought of the experience and is largely open-ended response questions. The program evaluation tool includes items such as, “Would you recommend this Master Gardener class to others”; “Did the class help you save money, or do you think it will in the future”; “Did the Master Gardener course help you to be a better environmental steward in regards to gardening and/or yard care”; “Did the Master Gardener class help you to become a better gardener”; and “Have you changed any gardening practices as a result of this course.” The program evaluation tool also asks the participant to evaluate items about the educational training such as time of year, time of day, handout materials, and instructors on a 5-point scale from Excellent to Poor. Participants are also asked to evaluate the individual class sections of the educational training (orientation, soil science, plant nutrition, plant science, plant disease diagnosis/control, insect pest diagnosis/control, weed identification/control, pesticide safety/pesticide alternatives, woody ornamentals, vegetables, herbaceous ornamentals, home lawns, and animal pests) on a 5-point scale from Excellent to Poor.

The program evaluation tool was reviewed by the researcher to determine the appropriateness and applicability to the current study. Input was received on the current and possible adaptation of the program evaluation tool from current Purdue Master

Gardener County Coordinators. This feedback was received through a web-based questionnaire. Respondents were asked to view the current evaluation and provide feedback on existing questions and on the possible addition of questions such as items about volunteering behaviors and attitudes about volunteering. Refer to Appendix A for email to Purdue Master Gardener County Coordinators requesting completion of the questionnaire and Appendix B for online questionnaire to request feedback on program evaluation tool.

Responses were received from 38 County Coordinators. Of those, 50% indicated that they currently use the program evaluation tool. When asked to respond about possible inclusion of items to the survey, 76.3% indicated that assessing environmental stewardship through use of specific environmental practices is important, 47.4% indicated that they thought it was a good idea to include items about volunteering, 44.7% indicated that items about service-learning should be added, and 13.2% thought items about social responsibility should be included.

As a large portion of the PMG Program is volunteer service hours completed by participants, the researcher also wished to evaluate Purdue Master Gardeners' participation in service-learning opportunities and its impact on their social responsibility, or their sense of obligation to help others in need. Through a thorough review of literature, it was determined what variables to measure that quantify respondents' social responsibility. Attitudes and self-efficacy have been repeatedly measured to help explain and predict social responsibility (Greenslade & White, 2005; Janoski et al., 1998; Okun & Sloane, 2002; Warburton & Terry, 2000; Wilson, 2000). Prior participation in service-learning has been measured because increased social

responsibility has been found to be an outcome of a service-learning experience (Rosenberg et al., 1999; Smith, 2008; Wilson & Musick, 1999). A quantification of the participation of Purdue Master Gardener Interns and Master Gardeners was also included within the study.

The researcher wanted to measure the change in social responsibility from before to after the program as the dependent variable, but asking respondents to recall attitudes and other measures from the past poses challenges. The decision was made to measure volunteer behaviors and have respondents self-report changes in attitudes and self-efficacy after participation in the program.

In order to meet the evaluation needs of the PMG Program, describe characteristics of Purdue Master Gardener Interns and Master Gardeners for this study, and measure demographics, attitudes, self-efficacy, participation in the PMG Program, and prior volunteering experience as possible predictive variables to volunteering behavior, a joint questionnaire was created. This allowed for easier implementation of the questionnaire, because respondents would only need to complete one questionnaire instead of two. This also allowed for only one Institutional Review Board (IRB) approval being necessary.

Structure of Questionnaire

Several considerations led to the final structure of the questionnaire. It has been found that the longer the questionnaire and the greater the number of prompts, the higher the likelihood that volunteers will report a higher percentage of volunteering behaviors

(Steinberg, Rooney, & Chin, 2002). Hall (2001) states that people tend to forget infrequent or informal volunteering and Havens and Schervish (1997) found that giving examples of volunteering behaviors is likely to jog respondents' memories and lead to a higher reporting of volunteering behaviors. For this reason, in the current study, the researcher provided many prompts to aid recall of what volunteering behaviors are associated with specific organizations for which respondents may have volunteered. Respondents may have participated in the activity, but not been able to recall the organization involved without the prompt.

Asking respondents to report volunteering behaviors in smaller amounts such as per week or per month, as opposed to per year, may help to aid in recall as posited by Steinberg et al. (2002). The Independent Sector, a network of foundations, non-profits, and corporate giving programs within the United States and around the world, also measures volunteer hours per month and calculates hours per year from that data ("Independent Sector," 2012).

The final questionnaire is broken into two main sections: the predictive variables included in the conceptual model section and the educational training evaluation section; consisting of a total of 88 items, including both quantitative and qualitative, within the two sections.

The first main section focuses on predictive variables and includes one section on each of the five potentially predictive variables: demographics (10 items), attitude (11 items), self-efficacy (12 items), participation in the PMG Program (5 items), and prior volunteering behavior (8 items). The dependent variable measured within the conceptual model consists of one item, total volunteer hours per month.

The second main section consists of the educational training evaluation (35 items). Items within the educational training evaluation section of the questionnaire were taken from the program evaluation tool already in use by the PMG Program. Within these items no distinction was made between the use of the words class (educational training) and program. For the purposes of this study, distinctions will be made between the educational training and the PMG Program. This section was answered only by Purdue Master Gardener Interns.

Six items on the questionnaire are not found in the conceptual model. Two items ask what organizations and for how many organizations respondents volunteer. Two items ask if respondents submit Master Gardener hours and why the hours are not submitted and are included only for use by program administrators. An additional two items ask the respondent if the PMG Program has changed volunteering behavior and what about it has changed the behavior. These six items are not included in the model because the items do not measure phenomena within the five potentially predictive variables or the educational training evaluation.

Variables in Questionnaire

Demographics

The demographic portion of the questionnaire asks respondents' gender, age, highest level of education achieved, occupation, gross estimated household income, marital status, number of people in household, race, ethnicity, and county of participation in the PMG Program. All demographic items were optional except county of participation in the PMG Program.

The gender item included the answer choices "Male" and "Female." The age categories included "18-24"; "25-34"; "35-44"; "45-54"; "55-64"; "65-74"; "75-84"; "85 or over"; and "I prefer not to answer this question." The highest level of education achieved item included the answer choices "Some High School"; "High School Diploma or GED equivalent"; "Some College experience"; "Associate's Degree"; "Bachelor's Degree"; "Master's Degree"; "Doctoral Degree"; and "I prefer not to answer this question." There were 26 occupation categories, based on the Bureau of Labor Statistics ("List of SOC Occupations," 2011) categories, including "Management"; "Business and Financial"; "Computers and Mathematics"; "Architecture and Engineering"; "Life, Physical, and Social Science"; "Community and Social Service"; "Legal"; "Education, Training, and Library"; "Arts, Design, Entertainment, Sports, and Medicine"; "Healthcare Practitioners and Technical"; "Healthcare Support"; "Protective Service"; "Food Preparation and Serving Related"; "Building and Grounds, Cleaning, and Maintenance"; "Personal Care and Service"; "Sales and Related"; "Office and

Administrative Support”; “Farming, Fishing, and Forestry”; “Construction and Extraction”; “Installation, Maintenance, and Repair”; “Production”; “Transportation and Material Moving”; “Military”; “Stay-at-Home-Parent”; “Retired”; and “Other.” While the Bureau of Labor Statistics does not include “Stay-at-Home-Parent” and “Retired” as occupational categories, the items were included in this study based upon the population being studied. Gross estimated household income was measured through the following categories: “\$0-\$20,000”; “20,001-\$40,000”; “\$40,001-\$60,000”; “\$60,001-\$80,000”; “\$80,001-\$100,000”; “\$100,001-\$120,000”; “\$120,001-\$140,000”; “\$140,001-\$160,000”; “\$160,001 or more”; and “I prefer not to answer this question.” The marital status item included the categories “Married, spouse present”; “Married, spouse absent, separated”; “Married, spouse absent, other”; “Widowed”; “Divorced”; “Never married”; “Single”; and “I prefer not to answer this question.” The number of people in household item included the answer choices “1”; “2”; “3”; “4-6”; and “7 or more.” The measurement of race included “Asian/Pacific Islander”; “Black/African American”; “Native American/Alaskan Native”; “White/Caucasian”; “Other”; and “I prefer not to answer this question.” The ethnicity item included “Hispanic”; “Non-Hispanic”; and “I prefer not to answer this question.” The item of county of participation in the PMG Program included a drop-down list of all 92 counties in Indiana.

All nominal demographic items limited respondents to selecting a single answer choice and were coded by assigning a value label to each category (answer choice) beginning with “1” up to the number of categories within each item. All ordinal demographic items limited respondents to selecting a single answer choice and were

coded by assigning a value label to each category (answer choice) beginning with “1” corresponding to the lowest level within the item.

The answer options for the education, race, and ethnicity items were taken from the Documenting the Contributions of 4-H Volunteers on 4-H Programs in the North Central Region (Chapin, 2008). The option of “I prefer not to answer this question” was added to these items. All demographic items can be found in the final questionnaire instrument in Appendix G.

Attitudes about Citizen and Individual Responsibility to Volunteer

The attitudes section of the questionnaire is broken down into attitudes about a citizen’s responsibility to volunteer and attitudes about an individual’s responsibility to volunteer. It is broken down into two sections, both measuring attitudes about volunteering, because some individuals may feel differently in placing responsibility on society or other citizens to volunteer and how he or she feels about his or her own responsibility to volunteer. The citizen’s responsibility section measures response to “I believe it is a citizen’s responsibility to participate in community service”; “People should find time to contribute to their communities”; “I believe that all members of a community should volunteer”; and “My belief that a citizen should volunteer has been strengthened as a result of participating in the Master Gardener Program”. These four items are measured on a 7-point Likert scale (Strongly Disagree = 1; Disagree = 2; Slightly Disagree = 3; Slightly Agree = 4; Agree = 5; Strongly Agree = 6; No opinion = 7), for which respondents are limited to selecting one answer choice. The respondents

are then asked to explain their answers, in an open-ended format, on whether or not attitudes about a citizen's responsibility to volunteer have been strengthened as a result of participating in the program. The open-ended item was optional and was open-coded to determine common themes throughout the responses.

The individual responsibility portion measures response to "I believe I have a responsibility to give back to my community"; "Involvement in programs to improve my community is important"; "I believe it is important for me to give back to my community by giving of my knowledge"; "I believe it is important for me to give back to my community by giving of my resources"; and "My belief that I should participate in community service has been strengthened as a result of participating in the Master Gardener Program". These five items are measured on a 7-point Likert scale (Strongly Disagree = 1; Disagree = 2; Slightly Disagree = 3; Slightly Agree = 4; Agree = 5; Strongly Agree = 6; No opinion = 7), for which respondents are limited to selecting one answer choice. Respondents are then asked to explain their answers, in an open-ended format, on whether or not attitudes about an individual's responsibility to volunteer have been strengthened as a result of participating in the program. The open-ended item was optional and was open-coded to determine common themes throughout the responses.

"People should find time to contribute to their communities" and "Involvement in programs to help my community is important" were taken verbatim from an instrument created by Weber et al. (2004), which consists of a combination of items created by experts and items from instruments created by Andrew Furco at the Service-Learning Center at the University of Berkeley (1999). The attitude questionnaire items are found in the final questionnaire instrument in Appendix G.

Self-Efficacy to Make a Positive Impact and Capacity to Volunteer

The self-efficacy portion of the questionnaire is broken down into two sections: self-efficacy to have a positive impact in the community and self-efficacy of the capacity to volunteer. While both sections measure self-efficacy, the self-efficacy portion is broken down into two sections because one section measures the confidence of the respondent to make a difference and one section measures self-efficacy in regards to limitations (such as time and skills) that may prohibit the individual from participating. The self-efficacy to have a positive impact portion includes “I can have a positive impact on social problems”; “I have confidence in my ability to help others”; “I can make a difference in my community”; “Each of us can make a difference in the lives of the less fortunate”; and “My belief that I can make a positive impact in my community has been strengthened as a result of participating in the Master Gardener Program”. These five items are measured on a 7-point Likert scale (Strongly Disagree = 1; Disagree = 2; Slightly Disagree = 3; Slightly Agree = 4; Agree = 5; Strongly Agree = 6; No opinion = 7), for which respondents are limited to selecting one answer choice. Respondents are then asked to explain their answers, in an open-ended format, on whether or not their self-efficacy to make a positive impact has been strengthened as a result of participating in the program. The open-ended item was optional and was open-coded to determine common themes throughout the responses.

The self-efficacy of the capacity to volunteer section of the questionnaire includes “I have the time to volunteer”; “I can make time to volunteer”; “I have the skills necessary to volunteer”; “I am able to gain the skills necessary to volunteer”; and “My belief that I have the capacity to volunteer has been strengthened as a result of

participating in the Master Gardener Program”. These five items are measured on a 7-point Likert scale (Strongly Disagree = 1; Disagree = 2; Slightly Disagree = 3; Slightly Agree = 4; Agree = 5; Strongly Agree = 6; No opinion = 7), for which respondents are limited to selecting one answer choice. Respondents are then asked to explain their answers, in an open-ended format, on whether or not self-efficacy of the capacity to volunteer has been strengthened as a result of participating in the program. The open-ended item was optional and was open-coded to determine common themes throughout the responses.

“I can have a positive impact on social problems”; “I have confidence in my ability to help others”; “I can make a difference in my community”; and “Each of us can make a difference in the lives of the less fortunate” were taken verbatim from an instrument created by Weber et al. (2004), which consists of a combination of items created by experts and items from instruments created by Andrew Furco at the Service-Learning Center at the University of Berkeley (1999). The self-efficacy questionnaire items are found in the final questionnaire instrument in Appendix G.

Participation in the Purdue Master Gardener Program

Participation in the PMG Program is measured with an operationalization of participation. This section of the questionnaire asks respondents “Are you an Intern or Master Gardener”; “How many years have you been a Master Gardener (answered only by those who did not previously specify Intern)”; “What is your Master Gardener Status (answered only by those who did not previously specify Intern)”; “What kind of Master

Gardener activities are you currently/ have you volunteered for in the past year”; and “How many hours per month are you volunteering for your Master Gardener hours”.

The item measuring if a respondent is an Intern or Master Gardener limited a respondent to selecting only one answer choice from either Intern or Master Gardener and was coded by assigning a value label corresponding to Intern = 1 and Master Gardener = 2. Years as a Master Gardener was measured through the following categories: “Less than 1 year”; “1-5”; “6-10”; “11-15”; “16-20”; “21-25”; and “25 or more.” The Master Gardener Status item included the categories “Master Gardener”; “Advanced”; “Bronze”; “Silver”; and “Gold.” Within the items years as a Master Gardener and Master Gardener status, respondents were limited to selecting only one answer choice and categories were coded beginning with “1” corresponding to the lowest level category. Respondents could indicate having participated in any or all of the following Master Gardener activities: “Program administration”; “Community service”; “Information booth”; “Communications”; “Demonstration garden”; “Hotline”; “Teaching others”; “Working with/teaching youth”; and “Other.” Categories for this item were coded as “0” if the respondent did not indicate participating in the activity and “1” if the respondent did indicate participating in the activity. The categories for Master Gardener volunteer hours per month included “1-10”; “11-20”; “21-30”; “31-40”; “41-50”; “50 or more”; and “I do not volunteer for my Master Gardener hours.” Respondents were limited to selecting only one category of Master Gardener volunteer hours. Categories for this item were coded beginning with “1” corresponding to the lowest level category. The participation in the program questionnaire items can be found in the final questionnaire instrument in Appendix G.

Prior Volunteer Experience

The prior volunteer experience section of the questionnaire asks respondents about volunteering they have done in the past. Respondents are asked “Where did you volunteer before participating in the Master Gardener Program”; “Before participating in the Master Gardener Program, on average, how many hours did you volunteer per month”; “If you had not volunteered before participating in the Master Gardener Program, why”; “Had you participated in a service-learning opportunity before participating in the Master Gardeners (definition of service-learning was provided)”; “Did you volunteer as a child or young adult”; “Have you completed volunteer hours as a requirement from an employer”; and “Did influential adults in your life emphasize the importance of volunteering”.

The before volunteering item allowed the respondents to select any or all of the following answer choices “Civic, political, or professional organization”; “4-H Youth Development”; “Educational or other youth serving organization”; “Environmental organization”; “Animal care organization”; “Hospital or healthcare organization”; “Public safety organization”; “Sport, hobby, cultural, or arts group”; “Social or community service group”; “Church or faith-based organization”; “Other”; and “I did not volunteer before participating in the Master Gardener Program.” Categories for this item were coded as “0” if the respondent did not indicate participating in the activity and “1” if the respondent did indicate participating in the activity. Respondents were instructed to select one of the following answer choices for before volunteering hours per month: “1-10”; “11-20”; “21-30”; “31-40”; “41-50”; “50 or more”; and “I did not volunteer before participating in the Master Gardener Program.” Categories for this item were coded by

assigning value labels beginning with “1” corresponding to the lowest level category. If respondents indicated they did not volunteer before participation, they were asked to indicate why by choosing any or all of the following answer choices: “Lack of time”; “Perceived lack of skills”; “No one asked me to”; “Did not want to”; and “Other.” Categories for this item were coded as “0” if the respondent did not indicate the reason for not volunteering and “1” if the respondent did indicate the reason for not volunteering. Participation in a service-learning opportunity, volunteering as a child or young adult, volunteering as a requirement from an employer, and respondents having influential adults in their lives were measured with a “Yes” or “No” format. Respondents were limited to selecting one answer choice and was coded by assigning value labels of Yes = 1 and No = 2.

The answer choices for the item “Where did you volunteer before participating in the Master Gardener Program” were taken from the Documenting the Contributions of 4-H Volunteers on 4-H Programs in the North Central Region (Chapin, 2008). The original use of these items did not include “4-H Youth Development Program” as an answer choice because the context for the use of these items is the 4-H Youth Development Program. The answer choice of “4-H Youth Development Program” was included in the questionnaire for this study. The prior volunteering experience questionnaire items are found in the final questionnaire instrument in Appendix G.

Educational Training Evaluation

The educational training evaluation section of the questionnaire was only completed by Purdue Master Gardener Interns. This portion of the questionnaire included “Why did you choose to participate in the Master Gardener Program” and “What is your level of agreement with the following statements: The Master Gardener Program helped me to become a better gardener; The Master Gardener Program helped me to become a better environmental steward in regards to gardening and/or yard care; The Master Gardener Program helped me to save money; and The Master Gardener Program was worth my time and money.” The level of agreement was measured on a 6-point Likert scale (Strongly Disagree = 1; Disagree = 2; Slightly Disagree = 3; Slightly Agree = 4; Agree = 5; Strongly Agree = 6). The educational training evaluation section also included the item “Please cite any specific examples of being a better environmental steward.” Respondents could choose any or all of the following practices: “Reduction in pesticide use”; “More responsible plant choices”; “Mulching/composting”; “Grass recycling”; “Using less water/more efficient watering practices”; “Use of rain barrels/rain gardens”; and “Other.” Categories for this item were coded as “0” if the respondent did not indicate using the practice and “1” if the respondent did indicate using the practice. Respondents answered “I use the following gardening practice...(plant placement/crop rotation, lawn care/cutting grass at 3 inches, more effective land use/less water intensive plants, testing soil, soil preparation practices, plant choice (less invasive/non-native), reduction/more responsible pesticide use, mulching/composting, saving seeds/ plants for the following year, and using less water/more efficient watering practices.” For each practice, respondents indicated a level of agreement for having used the practice on a 7-

point Likert scale (Strongly Disagree = 1; Disagree = 2; Slightly Disagree = 3; Slightly Agree = 4; Agree = 5; Strongly Agree = 6; No opinion = 7), for which respondents were limited to selecting one answer choice. Respondents were asked “Estimate how much money the Master Gardener Program has helped you save in a year,” and instructed to choose one of the following answer choices: “\$0-\$100”; “\$101-\$250”; “\$251-\$500”; “\$501 and up”; “The program has not helped me save money”; and “The program has not helped me save money, but I think it will in the future.” Categories were coded by assigning value labels beginning with “1” corresponding to the lowest level category. Respondents were also asked “Please rate these items (time of year, time of day, handout materials, facilities, and instructors) pertaining to the Master Gardener class on the following scale (5 = Excellent, 3 = Average, 1 = Poor)”; and “Please rate the Master Gardener classes (orientation, soil science, plant nutrition, plant science, plant disease diagnosis/control, insect pest diagnosis/control, weed identification/control, pesticide safety, woody ornamentals, vegetables, herbaceous ornamentals, home lawns, and animal pests) on the following scale (5 = Excellent, 3 = Average, 1 = Poor).” For these items, respondents were limited to selecting one answer choice. Educational training evaluation questionnaire items can be found in the final questionnaire instrument in Appendix G.

IRB Approval

IRB exemption approval was sought and granted for this research. The IRB Protocol is 1103010677 (April 2011). The approval letter can be found in Appendix H.

Researcher's Paradigm

The researcher operates from a positivist paradigm. This paradigm states that data observed and measured through empirical studies is the only source of knowledge (Ayer, 1959). The use of a survey methodology supports the researcher's paradigm because data measured through this type of methodology is not open to interpretation, but exists on its own without interpretation by the researcher.

Pilot Test

This questionnaire was piloted with the Tippecanoe County Master Gardeners with 75 respondents during September 2011. The Tippecanoe County Master Gardeners were chosen because they are an active, diverse group of Master Gardeners and represent more diversity than some of the other groups. The demographic diversity of the Tippecanoe County group may adequately represent the demographic diversity of Purdue Master Gardener Interns and Master Gardeners across the state. Tippecanoe County was also chosen for its proximity to the researcher and the familiarity with the coordinator in the county.

Through the use of Tippecanoe County as a group for the pilot test, many Purdue Master Gardeners were excluded from the final data analysis. Therefore, their demographic characteristics, perceptions of the educational training, and volunteering behavior are also excluded. The exclusion of any group of people from the final data analysis poses the same challenges.

The Purdue Master Gardener County Coordinator in Tippecanoe County sent an email with the link to the pilot questionnaire to Purdue Master Gardeners in the county asking for participation in the questionnaire. Respondents received an hour of volunteer service for completing the pilot version of the questionnaire. Giving an incentive to respondents is believed to increase response rates (Shannon, Johnson, Searcy, & Lott, 2002). Respondents were responsible for submitting the hour spent on the questionnaire to the coordinator, but were encouraged to print the last page of the questionnaire for verification if needed. Refer to Appendix D for the email to participants requesting completion of the pilot questionnaire.

The pilot questionnaire consisted of items within the five potentially predictive variables: demographics, attitudes, self-efficacy, participation in the program, and prior volunteering experience. It also included educational training evaluation items. After every item or group of items, space was made available for respondents to leave feedback. Refer to Appendix E for the online pilot questionnaire.

Open-ended feedback was coded to determine what changes needed to be made. Based on the feedback and results from the pilot test, appropriate changes were made to the questionnaire. These appropriate changes are explained below. Pilot test results are found in Appendix I.

Cronbach's alpha is a coefficient of reliability and a measure of the consistency of a scale (Cronbach, 1951). It is also a way to determine if a scale is measuring what was intended and if the scale will measure the concept consistently over time through repeated administrations of the same instrument. A high Cronbach's alpha, measured on a scale from 0-1.0, (Cronbach, 1951) indicates high reliability and consistency of the

scale being measured. An acceptable Cronbach's alpha value is .7 and above (George & Mallery, 2003). The reliability measure was conducted on the combined items within each variable and the educational training evaluation items.

Within the demographics section of the questionnaire, there were 10 items. Based on feedback on the demographic items in the pilot test, an answer choice of "I prefer not to answer this question" was added to avoid forcing respondents to share personal information or causing them to quit the survey. Cronbach's alpha reliability (Cronbach, 1951) was not calculated for demographic items because characteristics of respondents are measured consistently because the characteristics do not change.

The attitudes section was divided into four parts: citizen's responsibility to volunteer (4 items), individual responsibility to volunteer (4 items), giving (4 items), and view of community (3 items). The items within the section on giving were found to be similar to the group of items on attitudes about individual responsibility. Based on results of the pilot test, these groups of items were condensed and some items were deleted. On the view of community items, much feedback was received that it was not clear what community was in question. It also was not clear to the researcher how these items would inform the research and these items were deleted. Cronbach's alpha reliability (Cronbach, 1951) for the attitude scale is $\alpha = .928$ and is an acceptable value.

The self-efficacy section was divided into three sections: positive impact (5 items), time (3 items), and skills (4 items). The time and skills sections were determined to be quite similar and were combined and some items were deleted. Cronbach's alpha reliability (Cronbach, 1951) for the self-efficacy scale is $\alpha = .849$ and is an acceptable value.

In the PMG Program participation section (5 items), respondents were asked how many volunteer hours were attributed to the PMG Program. Within this item on the pilot test, one answer choice was 0-10 hours. After considering the possible confusion for respondents and the researcher, an option choice of 0 hours was added and 1-10 became an option. It was mentioned by a majority of pilot test respondents that not all Purdue Master Gardeners that volunteer turn in their hours. The researcher decided to ask respondents if they turn in their hours and if they do not, why. Cronbach's alpha (Cronbach, 1951) for participation in the PMG Program is $\alpha = .599$ and is not considered to be an acceptable value. Changes were made from the pilot questionnaire to the final questionnaire to potentially increase its reliability.

Changes were also made within the prior volunteering experience section (8 items). When asking about specific volunteer activities respondents participate in, there was not an option to state that respondents did not volunteer before participating in the program or do not currently volunteer. That choice also did not appear on the question that asked about how many organizations for which a person volunteers. That option was added on each question. Without this addition, respondents could be forced to report volunteering that did not occur. Also, two separate items on the pilot test, before volunteering organizations and specific activities, were combined for use in the final questionnaire to provide examples of activities within each organization. Cronbach's alpha reliability (Cronbach, 1951) for the prior volunteering experience scale is $\alpha = .011$ and is not considered to be an acceptable value. Changes were made from the pilot questionnaire to the final questionnaire to potentially increase its reliability.

In the educational training evaluation section (35 items), the wording was changed on the item that asks about gardening practices used to better reflect appropriate practices. Cronbach's alpha (Cronbach, 1951) for class evaluation items is $\alpha = .866$ and is an acceptable value. The educational training evaluation portion was reviewed for content validity by the Purdue Master Gardener State Coordinator. The final questionnaire was reviewed for content validity by experts in the field to determine the appropriateness of the content for the population being sampled. The Purdue Master Gardener State Coordinator reviewed the items for accuracy and applicability to the population being studied. Experts within the social science field reviewed the items for accuracy of scale to measure the intended variables.

Final Questionnaire Implementation

The final questionnaire was sent out to all PMG Program County Coordinators to send out to the Purdue Master Gardener Interns and Master Gardeners in each respective county. This was done through Master Gardener contact lists for each county. Purdue Master Gardener Interns and Master Gardeners were contacted through an email explaining the details of the questionnaire. This email included a link to the online questionnaire. All counties in Indiana that administer a PMG Program were given the opportunity to participate with the exception of Tippecanoe County, because they participated in the pilot test. Respondents were allowed one hour of volunteer service for completing the questionnaire. Respondents were prompted to print out the last page of

the questionnaire and submit it to their coordinators to receive credit for taking the questionnaire. Refer to Appendix F for the email to the participants of the final questionnaire.

Respondents had roughly two weeks to complete the questionnaire. At the two week deadline, a reminder was sent to all coordinators to email participants allowing two extra days to complete the questionnaire. Schaefer and Dillman (1998) found that 76% of respondents typically complete the requested survey within four days. This finding supports the use of reminders throughout the duration of the questionnaire to increase response rate. Within this study, the number of responses approximately doubled after a reminder was sent to County Coordinators to be sent on to participants. It is not possible to say that half of the responses are due to the use of the reminder; however, an increase in responses did occur after the reminder was sent out.

The researcher did not have access to a contact list for all Purdue Master Gardener Interns and Master Gardeners; therefore, the invitation for participation in the questionnaire was sent to Purdue Master Gardener County Coordinators with the information and a request that it be sent to the Purdue Master Gardener Interns and Master Gardeners in their respective county. As a result, it is not possible to know exactly how many County Coordinators sent it out or how many Purdue Master Gardener Interns and Master Gardeners viewed the invitation to participate in the questionnaire. Nor, is it possible to know, of the counties that did not have any response, if that was due to the County Coordinator not sending the request, or, simply, that no one responded from that county. Additionally, some of the counties in Indiana do not operate PMG Programs and were not able to participate.

Without knowing how many Purdue Master Gardener Interns and Master Gardeners received the invitation to participate, it is not possible to know the percentage that responded to the request. Therefore, it is not possible to calculate a response rate of those that received the invitation to participate in the questionnaire.

Statistical Analysis

Statistical analyses were conducted with IBM SPSS 19.1 Statistical Software for the Social Sciences. The initial response to the questionnaire was 754; however, some responses were excluded for the following reasons. One respondent only answered the first item. One response from Tippecanoe County was excluded because the Tippecanoe County group participated in the pilot questionnaire and should not have participated in the final questionnaire. Incomplete questionnaires were excluded from the analysis, resulting in exclusion of an additional 79 cases.

Descriptive statistics (frequencies, mean, median, mode, and standard deviation) of the demographics of Purdue Master Gardener Interns and Master Gardeners and attributes of the PMG Program were run on the remaining data set (N = 673).

The Central Limit Theorem allows the assumption that if the dependent variable within the sample is not normal, population means are normal when the sample size is greater than 30 (Field, 2009). The Central Limit Theorem allows the use of parametric tests on these analyses because of the large sample size (Field, 2009). This statistical analysis uses both parametric and non-parametric tests.

Relationships between items within variables and total volunteer hours per month were measured with Pearson's r correlations on independent variable items measured on an ordinal scale. An assumption of an interval level of measurement is made to calculate Pearson's r on ordinal scale items. A Point Biserial correlation is calculated when at least one of the variables is a nominal, dichotomous variable. The interpretation of a positive or negative correlation is not possible within a nominal level of measurement; therefore, just the strength (r) is reported. The Point Biserial correlation is interpreted according to the same scale as Pearson's r correlation (Scale: 0.0-0.09 = none; 0.1-0.3 = small; 0.3-0.5 = medium; and 0.5-1.0 = strong). One-way ANOVA was calculated with a nominal level of measurement when there are three or more categories (answer choices) for an item. Effect sizes (r^2 and eta squared (η^2)) are also calculated on all relationship measures, Pearson's r correlation and ANOVA, respectively. The interpretation scale for r^2 is as follows: 0.01-0.08 = small; 0.09-0.24 = medium; and >0.25 = large (Cohen, 1988). The scale for interpretation of r^2 is more conservative than the scale for Cohen's d . The interpretation scale for effect size of an ANOVA relationship (η^2) is the same guidelines as for r^2 Cohen (1988). Effect size is calculated to determine the magnitude of the effect, or whether or not one would expect to see that relationship in the population.

Table 2 lists questionnaire items and the statistical analyses calculated.

Table 2

Level of Measurement of Items and Statistical Analyses

Item	Level of Measurement	Statistical Analysis
Demographics		
Gender	Nominal	Point Biserial Correlation
Age	Ordinal (Interval)	Pearson's r Correlation
Education	Ordinal (Interval)	Pearson's r Correlation
Occupation	Nominal	One-way ANOVA
Income	Ordinal (Interval)	Pearson's r Correlation
Marital Status	Nominal	One-way ANOVA
# People in household	Ordinal (Interval)	Pearson's r Correlation
Race	Nominal	One-way ANOVA
Ethnicity	Nominal	Point Biserial Correlation
County of participation	Nominal	One-way ANOVA
Attitudes (9 items)	Ordinal (Interval)	Pearson's r Correlation
Self-efficacy (10 items)	Ordinal (Interval)	Pearson's r Correlation
Participation in PMG Program		
Intern or Master Gardener	Nominal	Point Biserial Correlation
Years as a Master Gardener	Ordinal (Interval)	Pearson's r Correlation
Master Gardener status	Ordinal (Interval)	Pearson's r Correlation

(continued)

Table 2 (continued)

Level of Measurement of Items and Statistical Analyses

Item	Level of Measurement	Statistical Analysis
Master Gardener activities	Nominal	Point Biserial Correlation
Master Gardener volunteer hours	Ordinal (Interval)	Pearson's r Correlation
Prior Volunteer Experience		
Before volunteering activities	Nominal	Point Biserial Correlation
Before volunteering hours	Ordinal (Interval)	Pearson's r Correlation
Lack of prior volunteering	Nominal	Point Biserial Correlation
Participation in a service-learning opportunity	Nominal	Point Biserial Correlation
Participation in volunteering as a child or young-adult	Nominal	Point Biserial Correlation
Participation in volunteering as a requirement from an employer	Nominal	Point Biserial Correlation
Emphasis on volunteering by influential adults	Nominal	Point Biserial Correlation
Total volunteering hours per month (dependent)	Ordinal	

Predictive Model

Ordinal logistic regression was utilized to construct a predictive model of total volunteer hours per month with the following items as independent variables: education, self-efficacy, years as a Master Gardener, whether or not someone had volunteered before participation in the PMG Program, prior service-learning experience, whether someone had volunteered as a child or young adult, and if someone had influential adults in his or her life that emphasized volunteering. Variance in the dependent variable, total volunteer hours per month, was regressed against these seven independent variables. The logistic regression procedure reveals the ordered log odds of each independent variable having a relative effect on the dependent variable, while other variables in the model are held constant and to determine whether relationships are statistically significant. Results of the ordinal logistic regression analysis will indicate what variables enter the model at statistical significance to have an effect on total volunteer hours per month of Purdue Master Gardener Interns and Master Gardeners.

In order to determine the appropriate regression procedure to utilize, several assumptions of the data were considered. The distribution and level of measurement of the dependent variable did not allow the use of ordinary least squares regression as originally planned. Ordinal logistic regression was used because of the ordinal level of measurement in the dependent variable. Ordinal logistic regression preserves information based on the ordering of the dependent variable, but it does not require interval-level measurement of the dependent variable. Zero-order correlations of the independent variables were inspected to test for possible multicollinearity that could bias the regression coefficients. Based on inspection of the correlation matrix, the researcher

omitted some of the originally hypothesized independent variables from the model. A chi-square test of parallel lines was conducted as a part of the regression analysis to test the proportional odds assumption. Results were not statistically significant, indicating that logistic regression assumptions were not violated with these data.

Due to unequal variance in the categories of the dependent variable, total volunteer hours per month, seven categories were collapsed into four categories: 1-5 hours per month, 6-14 hours per month, 15-23 hours per month, and 24 or more hours per month. The last four categories (24-32 hours, 33-41 hours, 42-50 hours, and 51 or more hours) were collapsed into one category (24 or more hours). *Before volunteering activities* items were combined to indicate if respondents had volunteered or not before participation in the PMG Program; becoming the variable *before volunteering*. Within the variable *years as a Master Gardener*, the last four categories (11-15 years, 16-20 years, 21-25 years, and 25 or more years) were combined into one category (11 or more years).

Summary

The statistical analyses conducted, guided by the research questions of this study, are frequencies and measures of central tendency to describe characteristics of Purdue Master Gardener Interns and Master Gardeners and the Purdue Master Gardener Interns' experience of the educational training received, relationships between potentially predictive variables and total volunteer hours per month, and relationships between

potentially predictive variables. Ordinal regression was then used to create a predictive model.

Results

Descriptive Statistics

Frequencies and measures of central tendency were run on all items within the conceptual model. All tables include data from both Purdue Master Gardener Interns and Master Gardeners unless otherwise indicated.

Demographic Data

Demographic data items were asked of Purdue Master Gardener Interns and Master Gardeners. All demographic items except county of participation were optional. Cronbach's alpha (Cronbach, 1951) is not reported on demographic items because demographic characteristics of a person do not change and will be measured consistently.

Respondents were asked to specify gender. More females (n = 537; 79.8%) than males (n = 134; 19.9%) responded to the questionnaire. Results are found in Table 3.

Table 3

Frequency Distribution of Gender Demographic Data of Purdue Master Gardeners

Gender	n	%
Female	537	79.8
Male	134	19.9
Missing data	2	0.3

Note. N = 673.

Respondents reported age from multiple answer choice brackets. The median age of respondents is 55-64 years (n = 258; 38.3%). Roughly one-fifth (n = 146; 21.7%) of respondents reported age as 45-54 years, followed by 65-74 years (n = 169; 25.1%).

Results are found in Table 4.

Table 4

Frequency Distribution of Age Demographic Data of Purdue Master Gardeners

Age	n	%
18-24	1	0.1
25-34	16	2.4
35-44	42	6.2
45-54	146	21.7
55-64	258	38.3
65-74	169	25.1
75-84	25	3.7
85 and over	3	0.4
Prefer not to answer this question	11	1.6
Missing data	2	0.3

Note. N = 673.

The highest level of education achieved by respondents was self-reported by choosing one of seven categories. The greatest frequency of respondents has earned a Bachelor's Degree (n = 218; 32.4%), followed by Master's degree (n = 152; 22.6%), and some college experience (n = 135; 20.1%). Results are found in Table 5.

Table 5

Frequency Distribution of Highest Level of Education Achieved Demographic Data of Purdue Master Gardeners

Education	n	%
Some high school	0	0
High school diploma or GED equivalent	54	8.0
Some college	135	20.1
Associate's degree	77	11.4
Bachelor's degree	218	32.4
Master's degree	152	22.6
Doctoral degree	30	4.5
Prefer not to answer this question	2	0.3
Missing data	5	0.7

Note. N = 673.

The largest response category for occupation was “Retired” (n = 261; 38.8%). The next largest response category was “Other” (n = 77; 11.4%), followed by healthcare practitioners and technical occupations (n = 52; 7.7%), and education, training, and library occupations (n = 46; 6.8%). Four “Other” responses were recoded as “Retired” because the respondent indicated being retired in the open-ended response. One response was recoded from “Other” to “Education, Training, and Library” because the respondent indicated being a teacher. Results are found in Table 6.

Table 6

Frequency Distribution of Occupation Demographic Data of Purdue Master Gardeners

Occupation	n	%
Retired	261	38.8
Healthcare practitioners and technical	52	7.7
Education, training, and library	46	6.8
Management	36	5.3
Office and administrative support	33	4.9
Stay-at-home parent	27	4.0
Business and financial operations	26	3.9
Sales and related	22	3.3
Computers and mathematics	17	2.5
Community and social service	10	1.5
Arts, design, entertainment, sports, and media	8	1.2
Healthcare support	8	1.2
Life, physical, and social science	7	1.0
Farming, fishing, and forestry	6	0.9

Note. N = 673.
(continued)

Table 6 (continued)

Frequency Distribution of Occupation Demographic Data of Purdue Master Gardeners

Occupation	n	%
Legal	6	0.9
Architecture and engineering	4	0.6
Personal care and service	4	0.6
Transportation and materials moving	4	0.6
Construction and extraction	3	0.4
Food preparation and serving related	3	0.4
Installation, maintenance, and repair	2	0.3
Military	2	0.3
Production (Manufacturing)	2	0.3
Protective service	2	0.3
Building and grounds cleaning and maintenance	1	0.1
Other	77	11.4
Missing data	4	0.6

Note. N = 673.

Occupations other than the answer choices were reported by 74 respondents. Of these, the most common responses were self-employed (n = 22) and unemployed (n = 7).

Some other responses included working as a school bus driver, director of a non-profit, flight attendant, and public relations.

Respondents reported gross estimated household income. The self-reported median income is \$60,001-\$80,000 (n = 107; 15.9%). Eighty-eight respondents (13.1%) reported gross estimated household income of \$40,001-\$60,000 and seventy-one respondents (10.5%) reported income of \$20,001-\$40,000. Indiana's median income is \$48,000 ("Indiana Quickfacts from US Census Bureau," 2012). Results are found in Table 7.

Table 7

Frequency Distribution of Gross Estimated Household Income Demographic Data of Purdue Master Gardeners

Income ^a	n	%
\$0-\$20,000	23	3.4
\$20,001-\$40,000	71	10.5
\$40,001-\$60,000	88	13.1
\$60,001-\$80,000	107	15.9
\$80,001-\$100,000	70	10.4
\$100,001-\$120,000	36	5.3
\$120,001-\$140,000	24	3.6
\$140,001-\$160,000	14	2.1
\$160,001 or more	44	6.5
Prefer not to answer this question	191	28.4
Missing data	5	0.7

Note. N = 673.

^aIndiana Median Income = \$48,000 per year

Respondents reported marital status demographic information. More than three-fourths (n = 522; 77%) reported being married with a spouse present, followed by divorced (n = 51; 7.6%), and widowed (n = 32; 4.8%). Results are found in Table 8.

Table 8

Frequency Distribution of Marital Status Demographic Data of Purdue Master Gardeners

Marital Status	n	%
Married, spouse present	522	77.6
Married, spouse absent, separated	2	0.3
Married, spouse absent, other	1	0.1
Widowed	32	4.8
Divorced	51	7.6
Never married	19	2.8
Single	24	3.6
Prefer not to answer this question	16	2.4
Missing data	6	0.9

Note. N = 673.

Of the 673 respondents who reported the number of people who live in the household, the majority (n = 426; 63.3%) responded that two people reside in the house, followed by one person in the household (n = 92; 13.7%), and three people in the household (n = 75; 11.1%). Results are found in Table 9.

Table 9

Frequency Distribution of Number of People in Household Demographic Data of Purdue Master Gardeners

# of people in household	n	%
1	92	13.7
2	426	63.3
3	75	11.1
4-6	2	0.3
7 or more	71	10.5
Missing data	7	1.0

Note. N = 673.

Respondents reported Race. The category with the largest response is White/Caucasian (n = 639; 95.4%). Results are found in Table 10.

Table 10

Frequency Distribution of Race Demographic Data of Purdue Master Gardeners

Race	n	%
White/Caucasian	639	95.4
Asian/Pacific Islander	4	0.6
Black/African American	1	0.1
Native American/Alaskan Native	1	0.1
Prefer not to answer this question	13	1.9
Other	12	1.9
Missing data	3	0.4

Note. N = 673.

While 12 respondents indicated “Other,” only eight of those respondents explained the “Other” response. One respondent reported being White and an immigrant, one respondent reported White/Native American, and one respondent reported Métis (North American Indian-European descent) (“Métis- The Canadian Encyclopedia,” 2012). Additionally, two respondents reported American, and three reported human or human race.

Respondents reported ethnicity demographic data as follows: Non-Hispanic (n = 582; 86.5%) and Hispanic (n = 6; 0.9%). Results are found in Table 11.

Table 11

Frequency Distribution of Ethnicity Demographic Data of Purdue Master Gardeners

Ethnicity	n	%
Non-Hispanic	582	86.5
Hispanic	6	0.9
Prefer not to answer this question	31	4.6
Missing data	54	8.0

Note. N = 673.

Respondents reported the county in which they participated in the Purdue Master Gardener Program. Of the 85 counties that operate PMG Programs, 38 counties participated in the questionnaire. Hamilton (n = 121; 18%) and Marion (n = 110; 16.3%) Counties had the most respondents. The county of participation item was not optional. Results are found in Table 12. Refer to Figure 3 for a map of responding counties.

Table 12

Frequency Distribution of County of Participation in the Program Demographic Data of Responding Purdue Master Gardeners

Indiana County	n	%
Allen	66	9.8
Blackford	4	0.6
Boone	25	3.7
Clark	11	1.6
Clay	2	0.3
Crawford	3	0.4
Dearborn	17	2.5
DeKalb	13	1.9
Delaware	1	0.1
Elkhart	35	5.2
Floyd	52	7.7
Franklin	2	0.3
Fulton	8	1.2
Gibson	7	1.0
Grant	14	2.1

Note. N = 673. There was no survey response from the following counties: Adams, Bartholomew, Benton, Brown, Carroll, Cass, Clinton, Daviess, Decatur, Dubois, Fayette, Fountain, Greene, Hancock, Henry, Howard, Jackson, Jay, Jefferson, Knox, LaGrange, Madison, Marshall, Martin, Miami, Monroe, Montgomery, Newton, Parke, Perry, Pike, Posey, Pulaski, Putnam, Randolph, Rush, Scott, Shelby, Spencer, St. Joseph, Starke, Sullivan, Switzerland, Tipton, Union, Vermillion, Vigo, Wabash, Washington, Wayne, Wells, White, and Whitley. Tippecanoe County did not participate because it participated in the Pilot Test. This item contains no missing data.

(continued)

Table 12 (continued)

Frequency Distribution of County of Participation in the Program Demographic Data of Responding Purdue Master Gardeners

Indiana County	n	%
Hamilton	121	18.0
Harrison	2	0.3
Hendricks	36	5.3
Huntington	13	1.9
Jasper	1	0.1
Jennings	6	0.9
Johnson	11	1.6
Kosciusko	9	1.3
Lake	2	0.3
LaPorte	1	0.1
Lawrence	5	0.7
Marion	110	16.3
Morgan	19	2.8
Noble	11	1.6
Ohio	1	0.1

Note. N = 673. There was no survey response from the following counties: Adams, Bartholomew, Benton, Brown, Carroll, Cass, Clinton, Daviess, Decatur, Dubois, Fayette, Fountain, Greene, Hancock, Henry, Howard, Jackson, Jay, Jefferson, Knox, LaGrange, Madison, Marshall, Martin, Miami, Monroe, Montgomery, Newton, Parke, Perry, Pike, Posey, Pulaski, Putnam, Randolph, Rush, Scott, Shelby, Spencer, St. Joseph, Starke, Sullivan, Switzerland, Tipton, Union, Vermillion, Vigo, Wabash, Washington, Wayne, Wells, White, and Whitley. Tippecanoe County did not participate because it participated in the Pilot Test. This item contains no missing data.

(continued)

Table 12 (continued)

Frequency Distribution of County of Participation in the Program Demographic Data of Responding Purdue Master Gardeners

Indiana County	n	%
Orange	3	0.4
Owen	2	0.3
Porter	21	3.1
Ripley	3	0.4
Steuben	1	0.1
Vanderburgh	29	4.3
Warren	1	0.1
Warrick	5	0.7

Note. N = 673. There was no survey response from the following counties: Adams, Bartholomew, Benton, Brown, Carroll, Cass, Clinton, Daviess, Decatur, Dubois, Fayette, Fountain, Greene, Hancock, Henry, Howard, Jackson, Jay, Jefferson, Knox, LaGrange, Madison, Marshall, Martin, Miami, Monroe, Montgomery, Newton, Parke, Perry, Pike, Posey, Pulaski, Putnam, Randolph, Rush, Scott, Shelby, Spencer, St. Joseph, Starke, Sullivan, Switzerland, Tipton, Union, Vermillion, Vigo, Wabash, Washington, Wayne, Wells, White, and Whitley. Tippecanoe County did not participate because it participated in the Pilot Test. This item contains no missing data.

Attitudes about Citizen and Individual Responsibility to Volunteer Data

Purdue Master Gardener Interns and Master Gardeners reported attitudes about volunteering. Cronbach's alpha reliability (Cronbach, 1951) was measured on the attitude scale ($\alpha = .892$). The Cronbach's alpha (Cronbach, 1951) is an acceptable value indicating that the attitudes scale is a reliable measure of attitudes within the respondents of the questionnaire. Within that scale, respondents answered four items about a citizen's responsibility (CR) to volunteer and five items about their own responsibility (IR) to volunteer.

The highest mean response for attitude items, on a 7-point scale, was for the item "Involvement in programs to improve my community is important- IR" ($M = 5.35$); followed by "I believe it is important for me to give back to my community by giving of my knowledge- IR" ($M = 5.23$); and "I believe it is a citizen's responsibility to participate in community service- CR" ($M = 5.22$). Results are found in Table 13.

Table 13

Frequency Distribution of Attitudes of Purdue Master Gardeners about Citizen and Individual Responsibility to Volunteer

Statement	Scale							Mean	Standard deviation
	Strongly disagree 1	Disagree 2	Slightly disagree 3	Slightly agree 4	Agree 5	Strongly agree 6	No opinion 7		
a. Involvement in programs to improve my community is important- IR	7 (1.0%)	0 (0%)	2 (0.3%)	44 (6.5%)	312 (46.4%)	306 (45.5%)	2 (0.3%)	5.35	0.77
b. I believe it is important for me to give back to my community by giving of my knowledge- IR	8 (1.2%)	3 (0.4%)	5 (0.7%)	74 (11.0%)	308 (45.8%)	271 (40.3%)	4 (0.6%)	5.23	0.86
c. I believe it is a citizen's responsibility to participate in community service- CR	11 (1.6%)	12 (1.8%)	14 (2.1%)	63 (9.4%)	262 (38.9%)	304 (45.2%)	7 (1.0%)	5.22	1.02
d. People should find time to contribute to their communities- CR	11 (1.6%)	6 (0.9%)	7 (1.0%)	57 (8.5%)	321 (47.7%)	266 (39.5%)	5 (0.7%)	5.21	0.92
e. I believe I have a responsibility to give back to my community- IR	9 (1.3%)	9 (1.3%)	12 (1.8%)	58 (8.6%)	300 (44.6%)	282 (41.9%)	3 (0.4%)	5.21	0.94
f. I believe it is important for me to give back to my community by giving of my resources- IR	10 (1.5%)	6 (0.9%)	12 (1.8%)	97 (14.4%)	310 (46.1%)	233 (34.6%)	5 (0.7%)	5.10	0.95
g. My belief that I should participate in community service has been strengthened as a result of participating in the Master Gardener Program- IR	9 (1.3%)	29 (4.3%)	27 (4.0%)	130 (19.3%)	249 (37.0%)	201 (29.9%)	28 (4.2%)	4.93	1.19
h. My belief that a citizen should volunteer has been strengthened as a result of participating in the Master Gardener Program- CR	14 (2.1%)	52 (7.7%)	25 (3.7%)	137 (20.4%)	215 (31.9%)	195 (29.0%)	35 (5.2%)	4.80	1.36
i. I believe that all members of a community should volunteer- CR	15 (2.2%)	41 (6.1%)	50 (7.4%)	143 (21.2%)	231 (34.3%)	171 (25.4%)	22 (3.3%)	4.69	1.31

Note. N = 673. CR = Citizen's Responsibility Item; IR = Individual Responsibility Item. These items contain no missing data.

Respondents were asked to explain their response to the item “My belief that a citizen should volunteer has been strengthened as a result of participating in the Master Gardener Program” and to explain their response to the item “My belief that I should participate in community service has been strengthened as a result of participating in the Master Gardener Program”. Respondents provided explanations for “My belief that a citizen should volunteer has been strengthened as a result of participating in the Master Gardener Program,” but not “My belief that I should participate in community service has been strengthened as a result of participating in the Master Gardener Program”. After examination of the online questionnaire instrument, it was determined that no errors existed in the collection of data from the item, there was simply no response. The responses for the first item referred to all nine attitude items as opposed to explaining if beliefs were strengthened due to participation in the program.

Of the 242 responses to the item “My belief that a citizen should volunteer has been strengthened as a result of participating in the Master Gardener Program,” five common themes emerged. The five common themes are “already volunteered/already believed should volunteer”; “PMG Program allowed individual to see results/benefits of volunteering”; “PMG Program offered opportunities to volunteer”; “PMG Program strengthened beliefs”; and “does not believe everyone should volunteer (for example: those that do not have time or are not physically able).”

One respondent wrote, “I have come to realize the importance of volunteering in my community; until I took this class, volunteering didn't occur to me.” Another stated “The program opens up many opportunities for involvement that benefit self and community.” Additionally, one respondent stated, “If time is not an issue I believe that

you should participate as much as possible; we are all responsible for keeping the environment healthy and is the best stress release there is!” Results are found in Table 14.

Table 14

Open-coded Responses of Self-reported Changes in Attitudes about Volunteering of Purdue Master Gardeners

Response	n	%
Already volunteered/ already believed should volunteer	91	13.5
PMG Program allowed individual to see results/benefits of volunteering	37	5.5
PMG Program offered opportunities to volunteer	35	5.2
PMG Program strengthened beliefs	29	4.3
Does not believe everyone should volunteer (for example: those not physically able or don't have time)	15	2.2
Other (no common theme)	35	5.2
Non-respondents (no answer provided)	431	64.0

Note. N = 673.

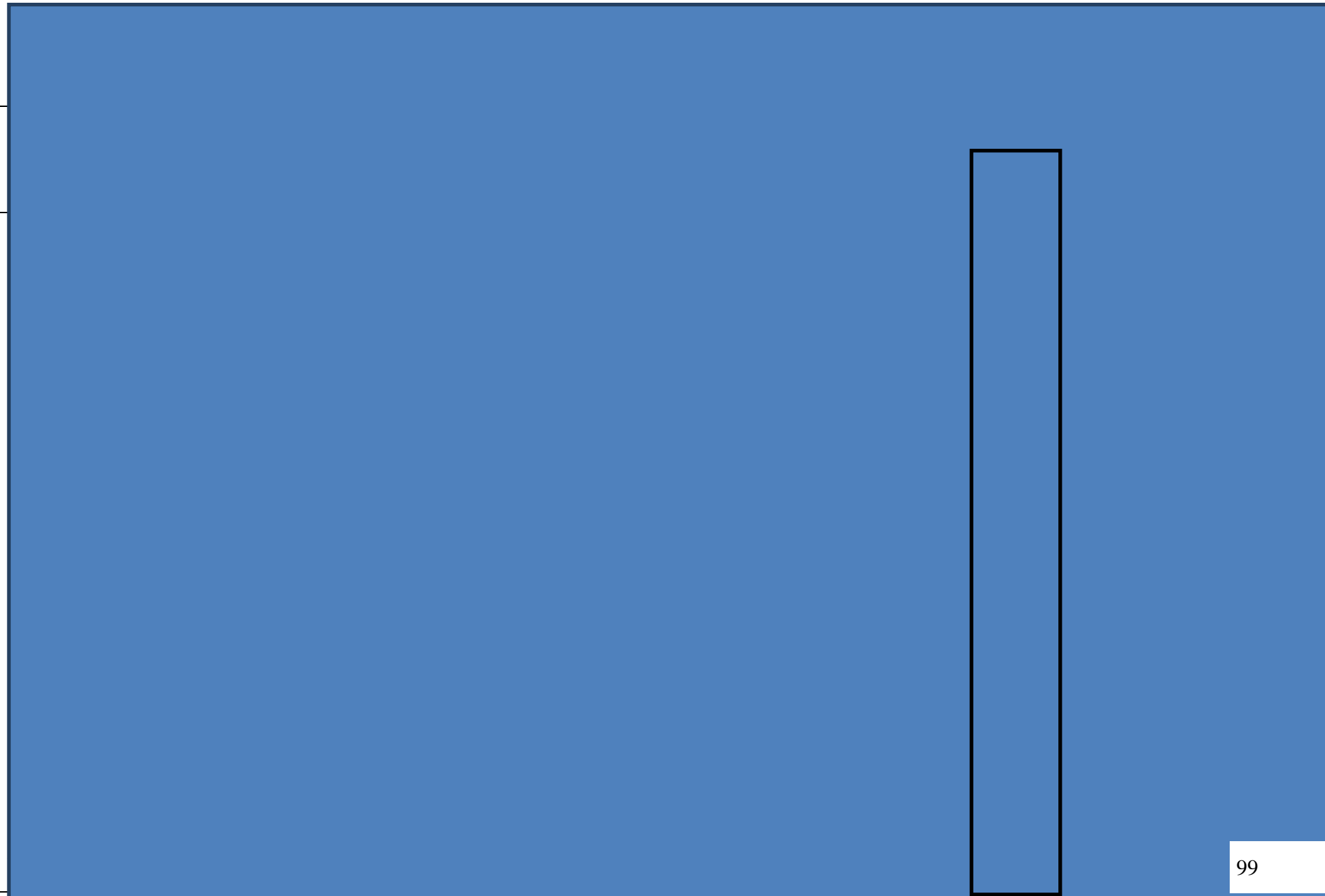
Self-Efficacy to Make a Positive Impact and Capacity to Volunteer Data

Purdue Master Gardener Interns and Master Gardeners reported self-efficacy to make a positive impact and self-efficacy of capacity to volunteer. Cronbach's alpha

reliability (Cronbach, 1951) was conducted on the self-efficacy scale ($\alpha = .852$). The Cronbach's alpha (Cronbach, 1951) is an acceptable value indicating that the attitudes scale is a reliable measure of attitudes within the respondents of the questionnaire.

Within that scale, respondents answered four items in regards to self-efficacy to make a positive impact (PI) and four items in regards to self-efficacy of capacity to volunteer (CV).

The highest mean response for self-efficacy items, on a 7-point scale, from “strongly disagree (1)” to “strongly agree (6)” and “no opinion (7)”, was for the item “I am able to gain the skills necessary to volunteer- CV” ($M = 5.33$); followed by “I have the skills necessary to volunteer- CV” ($M = 5.25$); and “I have confidence in my ability to help others- PI” ($M = 5.21$). Results are found in Table 15.



Respondents were asked to explain their response to the item “My belief that I can make a positive impact in my community has been strengthened as a result of participating in the Master Gardener Program” and to explain their response to the item “My belief that I have the capacity to volunteer has been strengthened as a result of participating in the Master Gardener Program”.

In response to the item “My belief that I can make a positive impact in my community has been strengthened as a result of participating in the Master Gardener Program,” there were 122 open-ended responses. From those responses, five common themes emerged “I have made an impact”; “the PMG Program has shown me different opportunities”; “always believed that I could make an impact”; “PMG Program has increased confidence, through training I am able to help”; and “I don’t think I have made an impact.”

One respondent stated, “Through my training in the program, I am able to help people in my community.” Other respondents wrote, “I actually am having a positive impact as I work as a Master Gardener” and “I have seen how my participation as an MG can play a role in education within the community, particularly with children.” Results are found in Table 16.

Table 16

Open-coded Responses of Self-reported Changes in Self-efficacy to Make a Positive Impact of Purdue Master Gardeners

Response	n	%
I have made an impact	49	7.3
PMG Program has shown me different opportunities	10	1.5
Always believed that I could make an impact	9	1.3
PMG Program has increased confidence, through training I am able to help	7	1.0
I don't think I have made an impact	4	0.6
Other (no common theme)	43	6.4
Non-respondents (no answer provided)	551	81.9

Note. N = 673.

In response to the item “My belief that I have the capacity to volunteer has been strengthened as a result of participating in the Master Gardener Program”, there were 114 open-ended responses. From those responses the following four themes emerged: “I already had the capacity/belief in my capacity/PMG Program did not change that”; “PMG Program has increased confidence”; “PMG Program has increased skills and knowledge”; “PMG Program gave me the opportunity to share skills and knowledge/showed me the opportunities available.”

One respondent wrote, “I have become braver by participating in the MG program as far as taking charge and speaking to the public are concerned.” Another stated, “I like

that the program encourages us to keep learning and sharing that new information; as well as the tried and true.” Still another wrote, “The Master Gardener Program offers numerous opportunities with advanced training and sharing information with other Master Gardeners in order to gain skills and knowledge.” Results are found in Table 17.

Table 17

Open-coded Responses of Self-reported Changes in Self-efficacy of Capacity to Volunteer of Purdue Master Gardeners

Response	n	%
PMG Program has increased skills and knowledge	30	4.5
PMG Program gave me the opportunity to share skills and knowledge, showed me the opportunities available	15	2.2
PMG Program has increased confidence	10	1.5
I already had the capacity, belief in my capacity, PMG program did not change it	9	1.3
Other (no common theme)	50	7.4
Non-respondents (no answer provided)	559	83.1

Note. N = 673.

Participation in the Purdue Master Gardener Program Data

Purdue Master Gardener Interns and Master Gardeners reported information about participation in the program. Respondents were asked in the first question to designate Intern or Master Gardener. Of the respondents of the survey, there were 500 Purdue

Master Gardeners and 173 Purdue Master Gardener Interns. Purdue Master Gardener Interns were directed to the Educational Training Evaluation Items before completing the rest of the questionnaire. Purdue Master Gardeners were directed to skip the Educational Training Evaluation Items and continue to the rest of the questionnaire.

On the participation in the PMG Program scale (all five items in the participation in the PMG Program variable), Cronbach's alpha reliability (Cronbach, 1951) was measured ($\alpha = .542$) and is not considered to be an acceptable value. The 500 Purdue Master Gardeners reported the number of years as a Purdue Master Gardener. The median year category is 1-5 years ($n = 222$; 44.4%). Almost one-third of respondents ($n = 135$; 27.0%) indicated being in the program for 6-10 years, followed by 11-15 years ($n = 78$; 15.6%). Results are found in Table 18.

Table 18

Frequency Distribution of Years as a Master Gardener of Purdue Master Gardeners

Years as Master Gardener	n	%
Less than 1 year	46	9.2
1-5	222	44.4
6-10	135	27.0
11-15	78	15.6
16-20	9	1.8
21-25	7	1.4
25 or more	3	0.6

Note. N = 500. This item contains no missing data.

Respondents reported the Purdue Master Gardener awards received based on hours of educational training time and volunteer service hours completed. The median status category is Advanced (n = 163; 32.6%). Twenty-one percent (n = 107) reported Master Gardener status, while twenty percent (n = 102) indicated Bronze status. Results are found in Table 19. Refer to Table 1 for explanation of certifications (status).

Table 19

Frequency Distribution of Status in the Program of Purdue Master Gardeners

Status	n	%
Master Gardener	107	21.4
Advanced	163	32.6
Bronze	102	20.4
Silver	69	13.8
Gold	59	11.8

Note. N = 500. This item contains no missing data.

Master Gardener volunteer activity participation was reported by both Purdue Master Gardener Interns and Master Gardeners. The five most often reported Master Gardener activities are the following: community service (n = 403; 60.0%), information booth (n = 318; 47.3%), teaching others (n = 272; 40.4%), program administration (n = 224; 33.3%), and demonstration garden (n = 177; 26.3). Results are found in Table 20.

Table 20

Frequency Distribution of Master Gardener Volunteer Activities of Purdue Master Gardeners

Master Gardener activity	n	% ^a
Community service (e. g. non-educational, such as beautification projects)	403	60.0
Information booth (e. g. fair)	318	47.3
Teaching others	272	40.4
Program administration (e. g. board member, committee work, reporting)	224	33.3
Demonstration garden	177	26.3
Working with/teaching youth	155	23.0
Communications (e. g. newsletter)	83	12.3
Hotline	69	10.3
Other	166	24.7

Note. N = 673. This item contains no missing data.

^aPercentages exceed 100% because multiple answers could be selected.

Respondents were able to report other Master Gardener activities participated in that were not included in the answer choices. While 166 respondents selected “Other,” additional Master Gardener activities were explained by 136 respondents. Of those, 22 (16.2%) reported that as Interns, they had not participated in any volunteer activities yet and 20 (14.7%) reported that they were not currently or had not volunteered within the

last year. Plant sales were also reported multiple times as an additional activity (n = 14; 10.3%).

Purdue Master Gardeners Interns and Master Gardeners reported hours per month spent volunteering for Master Gardener activities. The median response category is 1-10 hours per month. In addition, respondents reported volunteering 11-20 hours per month (n = 110; 16.3%) and 21-30 hours per month (n = 32; 4.8%). Almost nine percent indicated that they do not volunteer for their Master Gardener hours (n = 60; 8.9%).

Results are found in Table 21.

Table 21

Frequency Distribution of Master Gardener Volunteer Hours per Month of Purdue Master Gardeners

Volunteer hours per month	n	%
1-10	451	67.0
11-20	110	16.3
21-30	32	4.8
31-40	11	1.6
41-50	4	0.6
50 or more	5	0.7
I do not volunteer for my Master Gardener hours	60	8.9

Note. N = 673. This item contains no missing data.

Prior Volunteering Experience Data

Respondents reported information about prior volunteering experience before participating in the PMG Program. Cronbach's alpha reliability (Cronbach, 1951) was measured on the prior volunteering experience scale, which includes all eight items within the prior volunteering experience variable. The Cronbach's alpha ($\alpha = .100$) is not considered to be an acceptable value.

Purdue Master Gardener Interns and Master Gardeners reported volunteer activities participated in before participation in the program. The top five reported before volunteer activities are as follows: church or faith-based (n = 385; 57.2%); educational or other youth serving (n = 270; 40.1%); social or community service (n = 256; 38.0%); civic, political, or professional (n = 244; 36.3%); and sport, hobby, cultural or arts (n = 237; 35.2%). Results are found in Table 22.

Table 22

Frequency Distribution of Self-reported Volunteering Activities of Purdue Master Gardeners before Participation in the Purdue Master Gardener Program

Volunteer Activity	n	% ^a
Church or faith-based	385	57.2
Educational or youth serving	270	40.1
Social or community service	256	38.0
Civic, political, or professional	244	36.3
Sport, hobby, cultural, or arts	237	35.2
Environmental	206	30.6
Hospital or healthcare	151	22.4
Animal care	106	15.7
Other	79	11.7
4-H youth development	72	10.7
Public safety organization	32	4.8
I did not volunteer before participating in the Master Gardener Program	61	9.1

Note. N = 673. This item contains no missing data.

^aPercentages exceed 100% because multiple answers could be selected.

Of the 79 respondents who indicated participating in a volunteer activity other than those answer choices listed, 71 explained the other volunteering activity. Sixteen respondents (20.3%) indicated having volunteered at a child's school before participating

in the program. Other responses included prison ministry, Special Olympics, and neighborhood associations.

Respondents reported volunteer hours per month before participation in the PMG Program. The median response category is 1-10 hours per month (n = 407; 60.5%). Roughly one-fifth of respondents (n = 141; 21.0%) reported that they volunteered 11-20 hours per month before participation in the PMG Program. Results are found in Table 23.

Table 23

Frequency Distribution of Volunteering Hours Prior to Program Participation of Purdue Master Gardeners

Hours per month	n	%
1-10	407	60.5
11-20	141	21.0
21-30	41	6.1
31-40	12	1.8
41-50	5	0.7
50 or more	4	0.6
I did not volunteer before participating in the Master Gardener Program	63	9.4

Note. N = 673. This item contains no missing data.

Respondents who reported not having volunteered before participation in the PMG Program were asked to report the reason for the lack of volunteering. The most common reported response for not having volunteered was lack of time (n = 41), followed by no one asked (n = 22; 35.0%), and perceived lack of skills (n = 17; 27.0%). Results are found in Table 24.

Table 24

Frequency Distribution of Reasons Reported by Purdue Master Gardeners for not Volunteering Prior to Program Participation

Reason	n	% ^a
Lack of time	41	65.1
No one asked me to	22	35.0
Perceived lack of skills	17	27.0
Did not want to	12	19.0
Other	9	14.3

Note. N = 63. This item contains no missing data

^aPercentages exceed 100% because multiple answers could be selected.

Other reasons for not volunteering prior to participation in the PMG Program were reported by nine respondents. The responses included lack of awareness and other commitments.

Respondents were asked if they had participated in a service-learning opportunity prior to program participation. This questionnaire item included a definition of service-

learning in case a respondent was unclear about its meaning. Service-learning is defined as a well-thought out and organized experience where the participant takes part in learning and performs service in the community to expand on that learning (Eyler, 2002). The majority responded not having participated in service-learning prior to participation in the PMG Program (n = 452; 67.2%). Results are found in Table 25.

Table 25

Participation of a Purdue Master Gardener in a Service-Learning Opportunity Prior to Program Participation

Response	n	%
No	452	67.2
Yes	221	32.8

Note. N = 673. This item contains no missing data.

Respondents were also asked to explain the service-learning activity if yes was answered to the service-learning item. The open-ended response about the type of service-learning opportunity in which they participated was answered by 221 respondents. Community service and outreach activities were most often cited (n = 59; 26.7%). Other commonly cited responses were service-learning in the context of 4-H, youth, or educational (n = 55; 24.9%), church or faith-based (n = 31; 14.0%), environmental (n = 27; 12.2%), hospital, healthcare, or nursing home (n = 15; 6.8%), programs with a school because a child attends (n = 11; 5.0%), arts (n = 9; 4.1%),

gardening (n = 6; 2.7%), and animals (n = 5; 2.3%). Five respondents (2.3%) reported having facilitated service-learning in classes they have taught.

Purdue Master Gardener Interns and Master Gardeners were asked if they volunteered as a child or young adult (under the age of 18). The largest response category was that the respondent had volunteered as a child or young adult (n = 357; 53.0%); conversely, forty-seven percent indicated that they had not (n = 316; 47.0%). Results are found in Table 26.

Table 26

Participation of Purdue Master Gardeners in Volunteering as a Child or Young Adult

Response	n	%
Yes	357	53.0
No	316	47.0

Note. N = 673. This item contains no missing data.

Respondents reported if participation in volunteering had occurred, at any time, as a result of a requirement from an employer. Most respondents reported that they had not participated in volunteering as a requirement from an employer (n = 601; 89.3%).

Results are found in Table 27.

Table 27

Participation of Purdue Master Gardeners in Volunteering as a Requirement from Employer

Response	n	%
No	601	89.3
Yes	72	10.7

Note. N = 673. This item contains no missing data.

Respondents were asked if influential adults had emphasized the importance of volunteering in their lives. Roughly half of all respondents reported adults in their lives who emphasized the importance of volunteering (n = 343; 51%); while, 330 respondents (49%) reported not having influential adults in their lives who emphasized volunteering.

Results are found in Table 28.

Table 28

Frequency Distribution of Reported Adults who Emphasized Volunteering in a Purdue Master Gardener's Life

Response	n	%
Yes	343	51.0
No	330	49.0

Note. N = 673. This item contains no missing data.

Educational Training Evaluation Item Data

Educational training evaluation items were answered by Purdue Master Gardener Interns only (N = 173). These items were used to assess the advantages and effectiveness of the educational training portion of the program. Cronbach's alpha (Cronbach, 1951) was calculated on the educational training evaluation scale, which includes all 35 items within the educational training evaluation. Cronbach's alpha ($\alpha = .869$) for this scale is an acceptable value indicating high reliability for the educational training evaluation scale.

Purdue Master Gardener Interns reported the reasons for participating in the PMG Program. The most frequently cited reason for participating was to increase horticultural knowledge (n = 162; 93.6%), followed by as a hobby (n = 109; 63.0%), and to gain volunteer experience (n = 35; 20.2%). Results are found in Table 29.

Table 29

Purdue Master Gardener Interns' Reasons for Participating in the Program

Reason	n	% ^a
Increase horticultural knowledge	162	93.6
Hobby	109	63.0
Gain volunteer experience	35	20.2
With friend or family member	26	15.0
Other	15	8.7

Note. N = 173. This item contains no missing data.

^aPercentages exceed 100% because multiple answers could be selected.

Other reasons cited for beginning participation in the program were to meet new friends (n = 3) and have something to do in retirement (n = 2).

Purdue Master Gardener Interns reported level of agreement with four statements on perceived benefits of the program. Items were measured on a 6-point scale from “strongly disagree (1)” to “strongly agree (6).” Mean responses are as follows: “The Master Gardener Program was worth my time and money” (M = 5.62); “The Master Gardener Program helped me to become a better gardener” (M = 5.38); “The Master Gardener Program helped me to become a better environmental steward in regards to gardening and/or yard care” (M = 5.06); and “The Master Gardener Program helped me to save money” (M = 4.12). Results are found in Table 30.

Table 30

Program Benefits Perceived by Purdue Master Gardener Interns

Statement	Scale						Mean	Standard deviation
	Strongly disagree 1	Disagree 2	Slightly disagree 3	Slightly agree 4	Agree 5	Strongly agree 6		
a. The Master Gardener Program was worth my time and money	1 (0.6%)	0 (0%)	2 (1.2%)	8 (4.6%)	38 (22.0%)	124 (71.7%)	5.62	0.72
b. The Master Gardener Program helped me to become a better gardener	1 (0.6%)	0 (0%)	1 (0.6%)	12 (6.9%)	76 (43.9%)	83 (48.0%)	5.38	0.73
c. The Master Gardener Program helped me to become a better environmental steward in regards to gardening and/or yard care	1 (0.6%)	3 (1.7%)	6 (3.5%)	19 (11.0%)	89 (51.4%)	55 (31.8%)	5.06	0.90
d. The Master Gardener Program helped me to save money	2 (1.2%)	14 (8.1%)	23 (13.3%)	76 (43.9%)	39 (22.5%)	19 (11.0%)	4.12	1.10

Note. N = 173. This item contains no missing data.

Purdue Master Gardener Interns reported use of environmental practices in gardening. More responsible plant choices (n = 130; 75.1%) was reported most often by respondents, followed by mulching/composting (n = 123; 71.1%), and reduction in pesticide use (n = 121; 70%). Another 61.3% (n = 106) use less water or more efficient watering practices. Results are found in Table 31.

Table 31

Use of Environmentally Friendly Gardening Practices by Purdue Master Gardener Interns

Practice	n	% ^a
More responsible plant choices	130	75.1
Mulching/composting	123	71.1
Reduction in pesticide use	121	70.0
Using less water/more efficient watering practices	106	61.3
Grass recycling	67	38.7
Use of rain barrels/rain gardens	53	30.6
Other	22	12.7

Note. N = 173. This item contains no missing data.

^aPercentages exceed 100% because multiple answers could be selected.

Seven respondents mentioned that they were already aware of or were already using these practices. Two respondents stated that the program did not advocate or promote environmental practices. Other responses mentioned specific practices adopted

such as use of alternative pesticides or pest management practices and also educating friends and others more.

Purdue Master Gardener Interns reported level of agreement for use of each gardening practice. Items were measured on a 7-point scale from “strongly disagree (1)” to “strongly agree (6)” and “no opinion (7).” The highest mean response was for the gardening practice of mulching/composting ($M = 5.53$), followed by reduction/more responsible pesticide use ($M = 5.50$), lawn care ($M = 5.45$), and plant placement/crop rotation ($M = 5.44$). Results are found in Table 32.

Table 32

Use of Specific Gardening Practices by Purdue Master Gardener Interns

Practice	Scale							Mean	Standard deviation
	Strongly disagree 1	Disagree 2	Slightly disagree 3	Slightly agree 4	Agree 5	Strongly agree 6	No opinion 7		
Mulching/composting	2 (1.2%)	0 (0%)	3 (1.7%)	5 (2.9%)	59 (34.1%)	97 (56.1%)	7 (4.0%)	5.53	0.85
Reduction/more responsible pesticide use	1 (0.6%)	1 (0.6%)	1 (0.6%)	9 (5.2%)	64 (37.0%)	89 (51.4%)	8 (4.6%)	5.50	0.82
Lawn care	3 (1.7%)	2 (1.2%)	3 (1.7%)	11 (6.4%)	53 (30.6%)	89 (51.4%)	12 (6.9%)	5.45	1.25
Plant placement/crop rotation	3 (1.7%)	6 (3.5%)	1 (0.6%)	14 (8.1%)	57 (32.9%)	62 (35.8%)	30 (17.3%)	5.44	1.25
Soil preparation practices	1 (0.6%)	1 (0.6%)	0 (0%)	15 (8.7%)	69 (39.9%)	85 (49.1%)	2 (1.2%)	5.39	0.79
Plant choice (less invasive/non-native)	1 (0.6%)	5 (2.9%)	3 (1.7%)	7 (4.0%)	68 (39.3%)	84 (48.6%)	5 (2.9%)	5.36	0.97
Using less water/more efficient watering practices	2 (1.2%)	1 (0.6%)	7 (4.0%)	29 (16.8%)	70 (40.5%)	60 (34.7%)	4 (2.3%)	5.08	1.00
More effective land use/less water-intensive plants	2 (1.2%)	4 (2.3%)	7 (4.0%)	38 (22.0%)	69 (40.0%)	46 (26.6%)	7 (4.0%)	4.93	1.10
Saving seeds/plants for the following year	4 (2.3%)	9 (5.2%)	7 (4.0%)	46 (26.6%)	45 (26.0%)	45 (26.0%)	17 (9.8%)	4.86	1.38
Testing soil	10 (5.8%)	13 (7.5%)	9 (5.2%)	35 (20.2%)	53 (30.6%)	35 (20.2%)	18 (10.4%)	4.65	1.59

Note. N = 173. These items contain no missing data.

Purdue Master Gardener Interns reported perceived financial savings due to the PMG Program. The highest frequency of respondents ($n = 76$; 43.9%) reported that “The program has not helped me save money, but I think it will in the future,” followed by perceived savings of \$0-\$100 ($n = 31$; 17.9%), and “The program has not helped me save money” ($n = 29$; 16.8%). Results are found in Table 33.

Table 33

Financial Savings Perceived by Purdue Master Gardener Interns due to the Purdue Master Gardener Program

Savings	n	%
\$0-\$100	31	17.9
\$101-250	28	16.2
\$251-\$500	7	4.0
\$501 and up	2	1.2
The program has not helped me save money, but I think it will in the future	76	43.9
The program has not helped me save money	29	16.8

Note. $N = 173$. This item contains no missing data.

Educational training logistics items were evaluated by Purdue Master Gardener Interns on a 5-point scale from “Poor (1)” to “Excellent (5).” The three highest mean responses are for instructors ($M = 4.57$), time of day ($M = 4.45$), and facilitators ($M = 4.45$). Results are found in Table 34.

Table 34

Purdue Master Gardener Intern Evaluation of Educational Training Logistics

Logistic	Scale					Mean	Standard deviation
	Poor 1	Fair 2	Average 3	Good 4	Excellent 5		
Instructors	1 (0.6%)	0 (0%)	10 (5.8%)	51 (29.5%)	111 (64.2%)	4.57	0.66
Time of day	2 (1.2%)	3 (1.7%)	18 (10.4%)	42 (24.3%)	108 (62.4%)	4.45	0.84
Facilities	0 (0%)	1 (0.6%)	19 (11.0%)	54 (31.2%)	99 (57.2%)	4.45	0.71
Time of year	0 (0%)	4 (2.3%)	28 (16.2%)	38 (22.0%)	103 (59.5%)	4.39	0.84
Handout materials	4 (2.3%)	5 (2.9%)	19 (11.0%)	38 (22.0%)	107 (61.8%)	4.38	0.96

Note. N = 173. These items contain no missing data.

Purdue Master Gardener Interns evaluated individual educational training sessions on a 5-point scale from “Poor (1)” to “Excellent (5).” The pesticide safety and pesticides educational training session had the highest mean responses ($M = 4.54$), followed by plant nutrition ($M = 4.49$), orientation ($M = 4.47$), and soil science ($M = 4.47$). Results are found in Table 35.

Table 35

Purdue Master Gardener Intern Evaluation of Educational Training Session

Educational training session	Scale					Mean	Standard deviation
	Poor	Fair	Average	Good	Excellent		
	1	2	3	4	5		
Pesticide safety/pesticide	0 (0%)	0 (0%)	17 (9.8%)	45 (26.0%)	111 (64.2%)	4.54	0.67
Plant nutrition	0 (0%)	0 (0%)	13 (7.5%)	62 (35.8%)	98 (56.6%)	4.49	0.63
Orientation	0 (0%)	0 (0%)	19 (11.0%)	53 (30.6%)	101 (58.5%)	4.47	0.69
Soil science	0 (0%)	0 (0%)	18 (10.4%)	55 (31.8%)	100 (57.8%)	4.47	0.68
Home lawns	0 (0%)	3 (1.7%)	15 (8.7%)	56 (32.4%)	99 (57.2%)	4.45	0.73
Plant science	0 (0%)	1 (0.6%)	19 (11.0%)	61 (35.3%)	92 (53.2%)	4.41	0.71
Insect pest diagnosis/ control	0 (0%)	1 (0.6%)	20 (11.6%)	62 (35.8%)	90 (52.0%)	4.39	0.71
Plant disease diagnosis/ control	1 (0.6%)	0 (0%)	20 (11.6%)	63 (36.4%)	89 (51.4%)	4.38	0.74

Note. N = 173. These items contain no missing data.

(continued)

Table 35 (continued)

Purdue Master Gardener Intern Evaluation of Educational Training Session

Educational training session	Scale					Mean	Standard deviation
	Poor	Fair	Average	Good	Excellent		
	1	2	3	4	5		
Woody ornamentals	0 (0%)	2 (1.2%)	21 (12.1%)	64 (37.0%)	86 (49.7%)	4.35	0.74
Herbaceous ornamentals	0 (0%)	2 (1.2%)	30 (17.3%)	57 (32.9%)	84 (48.6%)	4.29	0.79
Animal pests	1 (0.6%)	2 (1.2%)	29 (16.8%)	60 (34.7%)	81 (46.8%)	4.26	0.82
Weed identification/ control	0 (0%)	6 (3.5)	26 (15.0%)	59 (34.1%)	82 (47.4%)	4.25	0.84

Note. N = 173. These items contain no missing data.

Total Volunteer Hours per Month Data

Respondents were also asked the total amount of volunteer hours (measured in hours per month) for which they participate. This total includes Master Gardener activity hours and other volunteer service that does not count for Master Gardener hours. The median response category is 6-14 hours per month (n = 219; 32.5%). The largest response category is 1-5 hours per month (n = 235; 34.9%), followed by 15-23 hours per month (n = 130; 19.3%). Results are found in Table 36.

Table 36

Total Volunteering Hours per Month (Including Master Gardener and non-Master Gardener Hours) of Purdue Master Gardeners

Hours per month	n	%
1-5	235	34.9
6-14	219	32.5
15-23	130	19.3
24-32	50	7.4
33-41	18	2.7
42-50	12	1.8
51 or more	9	1.3

Note. N = 673. This item contains no missing data.

Relationships between Predictive Variables and Dependent Variable

Relationships between items in each of the five potentially predictive variables and total volunteer hours per month were measured with Pearson's r correlations, Point Biserial correlations, and one-way ANOVAs.

Demographic Relationships

Relationships between demographic items and the dependent variable of total volunteering hours were measured with Pearson's r correlations, Point Biserial

correlations, and one-way ANOVAs. Pearson's r correlations were calculated when the level of measurement of the item is ordinal, but an assumption of interval level is made. Point Biserial correlations were calculated with a dichotomous, nominal variable. The interpretation of a positive or negative correlation is not possible within a nominal level of measurement; therefore, just the strength of r is reported. One-way ANOVA was used with a nominal level of measurement when there are three or more groups (answer choices) for an item and the respondent could choose only one. Effect sizes (r^2 with Pearson's r and Point Biserial correlations and eta squared (η^2) with ANOVA measurements) were also calculated.

The Point Biserial correlation is interpreted according to the same scale as Pearson's r correlation (Scale: 0.0-0.09 = none; 0.1-0.3 = small; 0.3-0.5 = medium; and 0.5-1.0 = strong). One-way ANOVA was calculated with a nominal level of measurement when there are three or more categories (answer choices) for an item. Effect sizes (r^2 and eta squared (η^2)) are also calculated on all relationship measures, Pearson's r correlation and ANOVA, respectively. The interpretation scale for r^2 is as follows: 0.01-0.08 = small; 0.09-0.24 = medium; and >0.25 = large (Cohen, 1988). The scale for interpretation of r^2 is more conservative than the scale for Cohen's d . The interpretation scale for effect size of an ANOVA relationship (η^2) is the same guidelines as for r^2 Cohen (1988). Effect size is calculated to determine the magnitude of the effect, or whether or not one would expect to see that relationship in the population.

Pearson's r was calculated to measure the relationships between total volunteer hours per month and age, education, income, and number of people in the household.

Point Biserial correlations were calculated to measure the relationships between total volunteer hours per month and gender and ethnicity.

Statistically significant relationships were found between total volunteer hours per month and age and total volunteer hours per month and education. This indicates that relationships between the items are most likely not due to chance. Results are found in Table 37.

Table 37

Relationships between Demographics and Total Volunteer Hours per Month of Purdue Master Gardeners by Pearson's r and Point Biserial Correlations

Questionnaire item	r	p	r^2
Gender	.017 ^a	.651	--
Age	.194	<.001	.038
Education	.089	.021	.008
Income	-.025	.583	--
# People in household	-.017	.665	--
Ethnicity	.018 ^a	.660	--

Note. ^a r_{pb} = Point Biserial Correlation Coefficient.

One-way ANOVA was calculated to measure the relationships between total volunteer hours per month and occupation, marital status, race, and county of participation. A statistically significant relationship was found between total volunteer hours per month and occupation. Results are found in Table 38.

Table 38

Relationships between Demographics and Total Volunteer Hours per Month of Purdue Master Gardeners by One-way ANOVA

	df	F	p	η^2
Occupation	25, 643	2.447	<.001	.095
Marital status	5, 644	2.007	.063	--
Race	4, 649	1.114	.349	--
County of participation	37, 635	1.136	.269	--

Note. $\alpha = .05$

Attitudes about Citizen and Individual Responsibility to Volunteer Relationships

The relationship between attitudes and the dependent variable of total volunteering hours per month were measured with a Pearson's r correlation. Pearson's r correlation is calculated when the level of measurement of the item is ordinal, but an assumption of interval level is made. Effect sizes (r^2) were also calculated.

All nine attitude items were collapsed into a single scale by adding responses from each individual item and dividing by the total number of items. The combined scale was correlated against total volunteering hours per month using a Pearson's r correlation.

A statistically significant relationship was found between total volunteer hours per month and attitudes (combined scale). Results are found in Table 39.

Table 39

Relationships between Attitudes of Purdue Master Gardeners and Total Volunteer Hours per Month by Pearson's r Correlation

Questionnaire item	r	p	r^2
Attitudes (combined scale)	.138	.001	.019

Self-Efficacy to Make a Positive Impact and Capacity to Volunteer Relationships

The relationship between self-efficacy and the dependent variable of total volunteer hours per month were measured with Pearson's r correlations and Point Biserial correlations. Pearson's r correlations are calculated when the level of measurement of the item is ordinal, but an assumption of interval level is made. Point Biserial correlations were used with a dichotomous, nominal variable. Effect sizes (r^2) were also calculated.

All 10 self-efficacy items were combined into a single scale by adding responses from each individual item and dividing by the total number of items. The combined scale was correlated against total volunteer hours per month using a Pearson's r correlation.

A statistically significant relationship was found between total volunteer hours per month and self-efficacy (combined scale). Results are found in Table 40.

Table 40

Relationships between Self-efficacy of Purdue Master Gardeners and Total Volunteer Hours per Month by Pearson's r Correlation

Questionnaire item	r	p	r^2
Self-efficacy (combined scale)	.227	<.001	.052

Participation in the Purdue Master Gardener Program Relationships

Relationships were measured between participation in the PMG Program and total volunteer hours per month with Pearson's r and Point Biserial correlations. Pearson's r correlation was calculated when the level of measurement of the item is ordinal, but an assumption of interval level is made. Point Biserial correlations were calculated with a dichotomous, nominal variable. The interpretation of a positive or negative correlation is not possible within a nominal level of measurement; therefore, just the strength of r is reported. Effect sizes (r^2 with Pearson's r and Point Biserial correlations) were also calculated.

Pearson's r correlations were calculated between total volunteer hours per month and years as a Master Gardener, Master Gardener status, and Master Gardener volunteering hours. Point Biserial correlations were calculated between total volunteer hours per month and Intern or Master Gardener and Master Gardener activities (program administration, community service, communications, info booth, demonstration garden, hotline, teaching others, working with/teaching youth, and other).

Statistically significant relationships were found between total volunteer hours per month and Intern or Master Gardener, total volunteer hours per month and years as a

Master Gardener, total volunteer hours per month and Master Gardener status, and total volunteer hours per month and the following Master Gardener activities: program administration, community service, communications, information booth, demonstration garden, teaching others, and working with/teaching youth. A statistically significant relationship was also found between total volunteer hours per month and Master Gardener volunteer hours. Results are found in Table 41.

Table 41

Relationships between Participation in the Purdue Master Gardener Program and Total Volunteer Hours per Month by Pearson's r and Point Biserial Correlations

Questionnaire item	r	p	r^2
Intern or Master Gardener	.210 ^a	<.001	.044
Years as Master Gardener	.180	<.001	.032
Master Gardener status	.353	<.001	.125
Master Gardener activities			
Program administration	.308 ^a	<.001	.095
Community service	.247 ^a	<.001	.061
Communications	.113 ^a	.003	.013
Information booth	.181 ^a	<.001	.033
Demonstration garden	.204 ^a	<.001	.041
Hotline	.059 ^a	.128	--
Teaching Others	.246 ^a	<.001	.061
Working with/ teaching youth	.135 ^a	<.001	.018
Other	.118 ^a	.002	.014
Master Gardener volunteer hours	.601	<.001	.361

Note. ^a r_{pb} = Point Biserial Correlation Coefficient.

Prior Volunteer Experience Relationships

Relationships were measured between prior volunteering experience and total volunteer hours per month with Pearson's r and Point Biserial correlations. Pearson's r correlation was calculated when the level of measurement of the item is ordinal, but an assumption of interval level is made. Point Biserial correlations were calculated with a dichotomous, nominal variable. The interpretation of a positive or negative correlation is not possible within a nominal level of measurement; therefore, just the strength of r is reported. Effect sizes (r^2 with Pearson's r and Point Biserial correlations) were also calculated.

Pearson's r correlations are calculated between before volunteer hours and total volunteer hours per month. Point Biserial correlations were calculated between total volunteer hours per month and before volunteering activities (civic, political, or professional organization, 4-H youth development, educational or other youth serving organization, environmental organization, animal care organization, hospital or healthcare organization, public safety organization, sport, hobby, cultural, or arts group, social or community service group, church or faith-based organization, other, and did not volunteer before participating in the Master Gardener Program); reason for not volunteering (lack of time, perceived lack of skills, no one asked them to, did not want to, and other); prior experience with a service-learning opportunity; if respondent volunteered as a child or young adult; if respondent volunteered as a requirement from an employer; and if influential adults in respondent's life emphasized volunteering.

Statistically significant relationships were found between total volunteer hours per month and the following before volunteering activities: hospital or healthcare;

environmental; civic, political or professional; church or faith-based; social or community service; sport, hobby, cultural, or arts group; and “I did not volunteer before participation in the Master Gardener Program. Statistically significant relationships were also found between total volunteer hours per month and before volunteer hours, total volunteer hours per month and influential adults in respondent’s life who emphasized volunteering, and total volunteer hours per month and service-learning. Results are found in Table 42.

Table 42

Relationships between Prior Volunteering Experience Items and Total Volunteer Hours per Month of Purdue Master Gardeners by Pearson’s r and Point Biserial Correlations

Questionnaire item	r	p	r^2
Before volunteering activity			
Hospital or health care	.164 ^a	<.001	.027
Environmental	.142 ^a	<.001	.020
Civic, political, professional	.141 ^a	<.001	.020
Church or faith-based	.137 ^a	<.001	.019
Social or community service	.131 ^a	.001	.017
Sport, hobby, cultural, or arts	.085 ^a	.028	.007
Public safety	.056 ^a	.150	--

Note. ^a r_{pb} = Point Biserial Correlation Coefficient.

(continued)

Table 42 (continued)

Relationships between Prior Volunteering Experience Items and Total Volunteer Hours per Month of Purdue Master Gardeners by Pearson's r and Point Biserial Correlations

Questionnaire item	r	p	r^2
Educational or other youth serving	.054 ^a	.160	--
Animal care	.040 ^a	.299	--
4-H youth development	.016 ^a	.685	--
Other	.006 ^a	.877	--
I did not volunteer before participating in the Master Gardener program	.104 ^a	.007	.011
Before volunteer hours	.393	<.001	.154
Lack of prior volunteering			
No one asked me to	.157 ^a	.224	--
Other	.128 ^a	.316	--
Perceived lack of skills	.096 ^a	.458	--
Lack of time	.087 ^a	.499	--
Did not want to	.087 ^a	.499	--
Influential adults in respondent's life emphasized volunteering	.119 ^a	.002	.014
Service-learning	.087 ^a	.024	.008
Volunteered as a child or young adult	.068 ^a	.079	--
Volunteered as a requirement from an employer	.042 ^a	.279	--

Note. ^a r_{pb} = Point Biserial Correlation Coefficient.

Relationships among Predictive Variables

Items within the variables of demographics, participation in the PMG Program, and prior volunteering experience cannot be combined into single scales because items were measured using different scales of measurement; however, attitude items and self-efficacy items can be combined. Pearson's r and Point Biserial correlations were calculated between items within the variable to determine strength of correlation. For a Point Biserial correlation, the interpretation of a positive or negative correlation is not possible because it is measured on a nominal level; therefore, just the strength of r is reported.

A large number of statistically significant relationships exist among potentially predictive variables; therefore, only those with medium correlations or higher ($r > .3$) will be discussed. Statistically significant relationships are present between items within the predictive variables: age and occupation; age and number of people in household; marital status and number of people in household; age and Master Gardener status; Master Gardener status and the participation in program administration as a Master Gardener volunteering activity within the PMG Program; Master Gardener status and teaching others as a Master Gardener volunteering activity; and community service (Master Gardener activity) and other Master Gardener activities. Statistically significant relationships also exist between Master Gardener volunteering hours and whether the respondent is an Intern or Master Gardener; Master Gardener volunteering hours and Master Gardener status; Master Gardener volunteering hours and program administration

as a Master Gardener volunteering activity; before volunteering hours and “I did not volunteer before”; and participation in a service-learning activity and “I did not volunteer before- I did not want to.”

Statistically significant relationships are present between “I did not volunteer before- lack of time” and income; “I did not volunteer before- lack of time” and “I did not volunteer before”; “I did not volunteer before- no one asked me to” and income; “I did not volunteer before- no one asked me to” and teaching others as a Master Gardener activity; “I did not volunteer before- no one asked me to” and information booth as a Master Gardener activity; “I did not volunteer before- perceived lack of skills” and number of people in household; “I did not volunteer before” and volunteering at a church as a before volunteering activity; and influential adults in respondent’s life who emphasized volunteering and if respondent had volunteered as a child or young adult. Relationships are also present between Intern or Master Gardener and years as a Master Gardener; whether respondent is an Intern or Master Gardener and Master Gardener status; years as a Master Gardener and Master Gardener status; and attitudes and self-efficacy. Results are found in Table 43.

Table 44

Interpretation of Questionnaire Item Codes for Correlation Matrix of Relationships among Potentially Predictive Variables

Code	Questionnaire item
1	Gender
2	Age
3	Education
4	Occupation
5	Income
6	Marital status
7	# of people in household
8	Race
9	Ethnicity
10	County of participation
11	Attitudes (combined scale)
12	Self-efficacy (combined scale)
13	Intern or Master Gardener
14	Years as Master Gardener
15	Master Gardener status
16	Program administration (Master Gardener activity)
17	Community service (Master Gardener activity)
18	Information booth (Master Gardener activity)
19	Communications (Master Gardener activity)
20	Demonstration garden (Master Gardener activity)
21	Hotline (Master Gardener activity)
22	Teaching others (Master Gardener activity)
23	Working with/teaching youth (Master Gardener activity)
24	Other (Master Gardener activity)
25	Master Gardener volunteer hours
26	Civic, political, professional (before volunteering activity)
27	4-H youth development (before volunteering activity)
28	Educational or youth serving (before volunteering activity)
29	Environmental (before volunteering activity)
30	Animal care (before volunteering activity)
31	Hospital or healthcare (before volunteering activity)
32	Public safety (before volunteering activity)
33	Sport, hobby, cultural, or arts (before volunteering activity)
34	Social or community service (before volunteering activity)
35	Church or faith-based (before volunteering activity)
36	Other (before volunteering activity)

(continued)

Table 44 (continued)

Interpretation of Questionnaire Item Codes for Correlation Matrix of Relationships among Potentially Predictive Variables

Code	Questionnaire item
37	I did not volunteer before participating in the Master Gardener Program (before volunteering activity)
38	Before volunteer hours
39	Lack of time (lack of prior volunteering)
40	Perceived lack of skills (lack of prior volunteering)
41	No one asked me to (lack of prior volunteering)
42	Did not want to (lack of prior volunteering)
43	Other (lack of prior volunteering)
44	Service-learning
45	Volunteered as a child or young adult
46	Volunteered as a requirement from an employer
47	Influential adults in respondent's life emphasized volunteering

Predictive Model

Ordinal logistic regression was used to assess the utility of the theoretical model developed in this study. Through this procedure, variance in the dependent variable, total volunteer hours per month, was regressed against seven independent variables: education, self-efficacy, years as a Master Gardener, if respondent had volunteered before participation in the PMG Program, service-learning, volunteered as a child or young adult, and influential adults in respondent's life emphasized volunteering. The logistic regression procedure reveals the ordered log odds of each independent variable having a relative effect on the dependent variable, while other variables in the model are held constant and whether relationships are statistically significant. Associated statistics for the ordinal logistic procedure are provided in Table 45.

Inspection of the parameter estimates and significance levels in Table 45 reveals that two variables, self-efficacy and years as a Master Gardener, entered the model at statistical significance. The parameter estimates reveal that a one-unit increase in self-efficacy leads to a .715 increase in the ordered log odds of being in a higher level of total volunteer hours per month. Individuals who express a higher level of self-efficacy are more likely to devote a greater number of hours to volunteering. In terms of years as a Master Gardener, statistically significant results were shown for two categories of this independent variable: Intern and less than a year as a Master Gardener. Regression results reveal that there is a .950 decrease in the log odds of Master Gardener Interns being in a higher level of total volunteer hours per month; similarly, there is a .808 decrease in the log odds of Master Gardeners with less than one year of participation in the PMG Program after earning the certification of Master Gardener being in a higher level of total volunteer hours per month. Master Gardener Interns and those with less than one year of being a Master Gardener are less likely to devote a greater number of hours to volunteering per month compared to individuals with more years of participation in the PMG Program.

Logistic regression does not produce an R-square statistic comparable to that generated in linear regression. However, a pseudo R-square described by Nagelkerke (1991) provides an indication of the relative performance of models in which maximum likelihood rather than explained variance is the chief criterion. The Nagelkerke pseudo R-square in the current model was .141, indicating modest performance of independent variables predicting change in levels of the dependent variable.

Table 45

Predictive Model of Total Volunteer Hours per Month Regressed Against Seven Independent Variables of Purdue Master Gardeners by Ordinal Logistic Regression

Variable	Parameter estimate	Standard error	Wald statistic	Sig.
Self-efficacy	.715	.147	23.565	<.001
Education- high school diploma or GED equivalent	-.742	.435	2.911	.088
Education- some college experience	-.467	.384	1.482	.223
Education- associate degree	-.590	.411	2.064	.151
Education- bachelor degree	-.391	.364	1.152	.283
Education- master degree	-.506	.374	1.829	.176
Education- doctorate degree	0 ^a	--	--	--
Years as a Master Gardener- Intern	-.950	.258	13.529	<.001
Years as a Master Gardener- less than 1 year	-.808	.353	5.250	.022
Years as a Master Gardener- 1-5 years	.097	.236	.167	.682
Years as a Master Gardener- 6-10 years	-.178	.259	.475	.491
Years as a Master Gardener- 11 or more years	0 ^a	--	--	--
Before volunteering- no	-.420	.290	2.091	.148

Note. N = 601. Significance level is .05.

^aThis parameter is set to zero because it is redundant.

(continued)

Table 45 (continued)

Predictive Model of Total Volunteer Hours per Month Regressed Against Seven Independent Variables of Purdue Master Gardeners by Ordinal Logistic Regression

Variable	Parameter estimate	Standard error	Wald statistic	Sig.
Before volunteering- yes	0 ^a	--	--	--
Service-learning- yes	.256	.166	2.376	.123
Service-learning- no	0 ^a	--	--	--
Volunteered as a child or young adult- yes	.111	.168	.438	.508
Volunteered as a child or young adult- no	0 ^a	--	--	--
Influential adults in one's life emphasized volunteering- yes	.154	.173	.790	.374
Influential adults in one's life emphasized volunteering- no	0 ^a	--	--	--
-2 log likelihood	1443.74			
χ^2	1643.66			
<i>df</i>	14			
Nagelkerke R^2	.141			

Note. N = 601. Significance level is .05.

^aThis parameter is set to zero because it is redundant.

In order to provide a visual of the results of the predictive model, the associated parameter estimates for each statistically significant variable can be entered into an

equation to highlight the associations between the variables and the dependent variable of total volunteer hours per month. This equation can be found in Figure 4.

$$\text{Total Volunteer Hours per Month} = 0.715 (\text{Self-} \\ \text{efficacy}) + -0.950 (\text{Years as a Master Gardener-} \\ \text{Intern}) + -0.808 (\text{Years as a Master Gardener- Less} \\ \text{than a year})$$

Figure 4. Diagrammatic illustration of predictive model

Discussion

Research Question #1a

What are the demographic characteristics of Purdue Master Gardener Interns and Master Gardeners?

This study found similar demographic groups participating in the Purdue Master Gardener Program to the demographic groups participating in programs in other states and previously in Indiana. According to the sample of Purdue Master Gardener Interns and Master Gardeners in this study, Purdue Master Gardener Interns and Master Gardeners tend to be white/non-Hispanic, female, retired, above median income for the State of Indiana, highly educated, married with a spouse present, and having two people living in the house. Although these demographics may refer to those that were most able or willing to participate in the questionnaire, the demographic results from this study compare similarly to other studies within the context of the national Extension Master Gardener Program and the PMG Program.

When comparing the demographics of Purdue Master Gardener Interns and Master Gardeners to the demographic makeup of the State of Indiana from the 2010 Indiana Census (“Indiana Quick Facts from US Census Bureau,” 2012), both Purdue Master Gardener Interns and Master Gardeners (95.4%) and Indiana Residents (84.3%) are predominantly white. Purdue Master Gardener Interns and Master Gardeners have

above average household income (\$60,001-\$80,000) compared to Indiana Households (\$48,000) and are more highly educated; 59.5% have a Bachelor degree or higher compared to Indiana Residents (22.4%).

Information about what demographic groups are participating could be very important in marketing and recruitment for the PMG Program. Conversely, if more diversity is a goal within a county program, information about who is not participating in the PMG Program may be important to expanded marketing efforts.

A recommendation to administrators of the PMG Program is to make efforts to increase diversity within the program. As a mission of any Cooperative Extension Program is equal access and equal opportunity, the researcher recommends extended efforts to include members of all demographic groups. In addition, the inclusion of minority demographic groups may require a change in perception of the group by participants and non-participants. This perception may have been perpetuated due to the continued lack of diversity within the program. The demographic results of this study provide an important opportunity for the administrators of the PMG Program.

Research Question #1b

How did the participants of the Purdue Master Gardener Program (Pre-Intern) perceive the experience of the Educational Training?

For the portion of the questionnaire that served as the Educational Training Evaluation, Purdue Master Gardener Intern respondents viewed the experience of the

educational training positively. Almost three-fourths (n = 124; 71%) of Purdue Master Gardener Interns strongly agreed that the program was worth the time and money spent. The majority of respondents (n = 159, 92%) either agreed or strongly agreed that the program helped the respondent to become a better gardener. These results indicate the PMG Program is successful in its implementation.

The respondents regarded the educational training very highly, as indicated by the majority of respondents rating all of the educational training sessions and logistics with excellent or good ratings. There could be many reasons that the respondents rated these aspects highly such as: educational training sessions were easy, snacks were included at the sessions, participants gained the information that was wanted, or the presenter was informative and interesting. It is not possible to know exactly why the respondents rated the educational training and logistics so highly; however, with the large sample size, across multiple county programs, it is likely that the educational training and logistics sufficiently met the Purdue Master Gardener Interns' expectations.

The most often cited reason for participating in the PMG Program was to increase horticultural knowledge. This finding is aligned with other studies conducted within the context of the national Extension Master Gardener Program (Boyer et al., 2002; Schrock et al., 2000; Strong & Harder, 2010; Wilson & Newman, 2011). The stated purpose of the program is to “teach people more about growing plants and to more effectively extend information related to plants” (Purdue Master Gardener Program State Advisory Committee, 2010). It is indicative of the quality of the program that respondents would cite a reason for participation that is aligned with the purpose of the PMG Program.

The educational training was also perceived to have led to changes in gardening or environmental practices. More than three-fourths of respondents (n = 144; 83%) either agreed or strongly agreed that the educational training helped them to be better environmental stewards. Changes in environmental practices are another benefit of the educational training.

While the specific changes in gardening or environmental practices that occurred were not directly measured within this study, the study did measure what practices are being used. Within the educational training evaluation, the use of both environmental practices and gardening practices were measured.

The environmental practice of the use of more responsible plant choices had more reported uses (n = 130, 75.1%) than any other practice. The use of mulching/composting (n = 123, 71.1%), reduction in pesticide use (n = 121, 70%), and using less water/more effective watering practices (n = 106, 61.3%) were also reported by a large number of respondents (NOTE: percentages will add up to more than 100% because respondents could choose more than one practice used).

For all of the gardening practices listed (mulching/composting (n=156, 90.2%), reduction/more responsible pesticide use (n = 153, 88.4%), lawn care (n= 142, 82.1%), plant placement/crop rotation (n = 119, 68.8%), soil preparation practices (n = 154, 89%), plant choice (less invasive/non-native) (n = 152, 87.9%), using less water/more efficient watering practices (n = 130, 75.1%), more effective land use/less water-intensive plants (n = 115, 66.5%), saving seeds/plants for the following year (n = 90, 52%), and testing soil (n = 88, 50.9%), the majority of respondents either agreed or strongly agreed the practice was used.

The results from the Educational Training Evaluation portion of the questionnaire will be beneficial in PMG Program implementation and maintenance by providing County Coordinators with information on whether or not specific facilities and times of day and year worked. This is important because if an educational training session was at a time of day or year when many could not come, the opportunity is missed to include that individual or individuals. Another consideration in scheduling time of day and year is occupational commitments. County Coordinators may keep in mind variety in work day length and schedule and other occupational commitments such as busy times of the year for those in certain occupations such as farmers or accountants. Holding educational training sessions at appropriate venues may impact how an individual views the experience, and if it is a bad experience, that individual may influence others to not participate.

Implementation of appropriate educational training sessions is also important. They must be appropriate for the knowledge level of those participating in the educational training. The educational training must also reflect current trends and practices in the horticultural field, thereby fulfilling the land grant university mission of disseminating research knowledge to the public.

Research Question #2

What are the relationships between potentially predictive variables and volunteering behaviors, as measured by total volunteer hours per month, of Purdue Master Gardener Interns and Master Gardeners?

There are many significant relationships between potentially predictive variables and total volunteer hours per month. These relationships are statistically significantly different which indicates that the variances in total volunteer hours per month due to the independent variable are not due to chance. Significant relationships are determined through Pearson's r and Point Biserial correlations (Scale: 0.0-0.09 = none; 0.1-0.3 = small; 0.3-0.5 = medium; and 0.5-1.0 = strong). Effect size (r^2) is calculated to determine the magnitude of the effect of the relationship, or whether or not someone would expect to see that relationship in the population. The interpretation scale for r^2 is as follows: 0.01-0.08 = small; 0.09-0.24 = medium; >0.25 = large (Cohen, 1988). ANOVA is calculated on nominal variables which are not dichotomous (have more than two categories). Effect size (η^2) is reported for ANOVA calculations. Interpretation scale for effect size of an ANOVA relationship is the same as Cohen (1988).

As for demographics, a small, positive relationship exists with total volunteer hours per month and age ($r = .194$) and education ($r = .089$). Higher self-reported volunteer hours per month occur with higher age and higher levels of education. Total volunteer hours per month and age ($r^2 = .038$) and education ($r^2 = .008$) have small effect sizes. A statistically significant relationship is present between total volunteer hours per month and occupation ($F(25, 643) = 2.447, p < .001$) with a small effect size ($\eta^2 = .095$). A large number of respondents reported occupation as being retired ($n = 261, 38.8\%$). Respondents that are retired may have reported higher total volunteer hours per month because retired persons may have more free time to participate in volunteering activities. Those that are older and retired may also have achieved higher status within the PMG Program through possibly having more free time to volunteer.

Attitudes ($r = .138$) and self-efficacy ($r = .227$) and total volunteer hours per month have small, positive relationships as well. A respondent reports higher total volunteer hours per month if the respondent has stronger and more positive attitudes and self-efficacy. This finding is aligned with this study's theoretical and conceptual frameworks that attitudes and perceived behavioral control may help to predict behavior. Small effect sizes are present with total volunteer hours per month and attitudes ($r^2 = .019$) and self-efficacy ($r^2 = .052$).

Several of the *participation in the PMG Program* and *prior volunteering experience* relationships with total volunteer hours per month were calculated with a Point Biserial correlation. A Point Biserial correlation is utilized when at least one of the variables is a nominal, dichotomous variable. The interpretation of a positive or negative correlation is not possible within a nominal level of measurement; therefore, just the strength (r) is reported. The coefficient r is interpreted according to the same scale as Pearson's r correlation (Scale: 0.0-0.09 = none; 0.1-0.3 = small; 0.3-0.5 = medium; and 0.5-1.0 = strong).

Point Biserial correlations were calculated between total volunteer hours per month and whether the respondent is an Intern or Master Gardener and total volunteer hours per month and Master Gardener activities. A medium relationship and medium effect is present between program administration (Master Gardener activities) and total volunteer hours per month ($r = .308$; $r^2 = .095$). Small relationships and small effect sizes exist between total volunteer hours per month and whether the respondent is an Intern or Master Gardener ($r = .210$; $r^2 = .044$) and total volunteer hours per month and the following Master Gardener activities: community service ($r = .247$; $r^2 = .061$),

teaching others ($r = .246$; $r^2 = .061$), demonstration garden ($r = .204$; $r^2 = .041$), information booth ($r = .181$; $r^2 = .033$), working with/teaching youth ($r = .135$; $r^2 = .018$), and communications ($r = .113$; $r^2 = .013$).

The difference between whether a respondent is an Intern or Master Gardener accounts for a difference in total volunteer hours per month reported. As expected, Purdue Master Gardeners reported higher total volunteer hours per month. This is most likely because many Purdue Master Gardener Interns have recently finished the educational training and have either just begun or not yet begun volunteering yet. Also Purdue Master Gardeners who have achieved higher awards (Advanced, Bronze, Silver, and Gold) are required to complete increasingly larger quantities of cumulative volunteer service hours (60, 200, 500, and 1000), respectively.

A variety of self-reported Master Gardener activities were found in this sample. All Master Gardener activities had statistically significant relationships to total volunteer hours per month except hotlines; possibly due to the low reported rate of participation in a hotline. These results may be indicative of a shift occurring within the national Extension Master Gardener Program in how Master Gardeners extend horticultural knowledge to the public. Historically, hotlines were the most popular way to disseminate horticultural information, but a shift is occurring to more community and environmental outreach activities (Chalker-Scott & Collman, 2006; Meyer, 2007; Relf & McDaniel, 1994; Ruppert, et al., 1997). This shift in Master Gardener volunteering activities may be occurring because of the use of the internet and technology by the public to get horticultural information. Additionally, it is not known exactly how many counties operate phone answering hotlines.

Pearson's r correlations were calculated between total volunteer hours, as measured by hours per month, and years as a Master Gardener, Master Gardener status, and Master Gardener volunteer hours. A small, positive relationship exists between total volunteer hours per month and years as a Master Gardener ($r = .180$) with a small effect size ($r^2 = .032$). A medium, positive relationship is present between total volunteer hours per month and Master Gardener status ($r = .353$). The relationship between total volunteer hours per month and Master Gardener status has a medium effect size ($r^2 = .125$). Master Gardener volunteer hours and total volunteer hours per month have a strong, positive relationship ($r = .601$) and a large effect size ($r^2 = .361$).

Participation in the PMG Program (length of service and commitment to the PMG Program) as measured by years as a Master Gardener and Master Gardener status, has strong implications for the PMG Program. The respondents that reported longer service or higher status in the PMG Program are volunteering more total hours per month. This is important for County Coordinators in the retention of volunteers. Promoting retention within the PMG Program may help to increase volunteer hours completed by Purdue Master Gardener Interns and Master Gardeners.

Master Gardener volunteering hours is highly correlated with total volunteer hours per month because total volunteer hours per month also include those activities for volunteer service hours in the PMG Program. This is supported by the strong correlation between total volunteer hours per month and Master Gardener volunteering hours ($r = .601$).

Point Biserial correlations were calculated between total volunteer hours per month and before volunteering activities, whether or not the respondent participated in a

service-learning opportunity, and if respondent had influential adults in respondent's life that emphasized volunteering. Small to no correlations and small to trivial effect sizes are present between total volunteer hours per month and the before volunteering activity of sport, hobby, cultural, or arts group ($r = .085$; $r^2 = .007$) and total volunteer hours and service-learning ($r = .087$; $r^2 = .008$). There are small correlations and small effect sizes between total volunteer hours per month and the following before volunteering activities: civic, political, or professional organization ($r = .141$; $r^2 = .020$), environmental organization ($r = .142$; $r^2 = .020$), hospital or healthcare organization ($r = .164$; $r^2 = .027$), social or community service group ($r = .131$; $r^2 = .017$), church or faith-based organization ($r = .137$; $r^2 = .019$), and I did not volunteer before ($r = .104$; $r^2 = .011$). A small relationship and small effect size exists between total volunteer hours per month and if a respondent had an influential adult in the respondent's life who emphasized volunteering ($r = .119$; $r^2 = .014$).

Purdue Master Gardener Interns and Master Gardeners who self-report higher total volunteer hours per month were more likely to have volunteered for civic, political, or professional organizations, environmental organizations, hospital or healthcare organizations, sport, hobby, cultural or arts groups, social or community service groups, or church or faith-based organizations before participation in the PMG Program than for other types of organizations. More than half of all respondents reported having volunteered with a church or faith-based organization ($n = 385$). These results are important for recruitment because they provide information for which organizations potential Purdue Master Gardener Interns and Master Gardeners volunteer and where marketing materials could be targeted.

Though small, a statistically significant relationship ($r = .087$) is present between reported participation in a service-learning opportunity and total volunteer hours per month. Challenges in interpretation of this result exist because a strict definition of service-learning is not universally accepted. For that reason, the concept may be misunderstood by many respondents of this study, despite inclusion of a definition in the survey instrument. This misunderstanding may have led some respondents to answer that they had participated in service-learning when they had not, because many of the open-ended responses to explain the service-learning did not refer to service-learning experiences.

Whether or not respondents had influential adults in their lives that emphasized volunteering also had a statistically significant relationship with total volunteer hours per month ($r = .119$). Prior positive associations with volunteering may have a positive impact on whether or not an individual volunteers in his or her adult life (Janoski et al., 1998). This result indicates that engaging youth in positive conversations and associations with volunteering behaviors can have positive outcomes in the future reflected by increased volunteer hours contributed to the community by that individual.

Pearson's r correlations were calculated between before volunteering hours and total volunteering hours per month. A medium, positive relationship and medium effect size is present between before volunteering hours and total volunteering hours per month ($r = .393$; $r^2 = .154$). The more a respondent volunteered before participation in the PMG Program, the higher were the respondent's self-reported total volunteer hours per month. The large effect size for this relationship indicates that prior volunteering is a strong indicator of future volunteering. This finding aligns with the finding by Janoski et al.

(1998) that prior volunteering does oftentimes indicate future volunteering. In other words, individuals that have volunteered are likely to continue volunteering.

Research Question #3

What are the relationships among potentially predictive variables?

Pearson's r correlations were calculated to determine the significant relationships among potentially predictive variables. A large number of statistically significant relationships exist among potentially predictive variables; therefore, only those with medium correlations or higher ($r > .3$) will be discussed. Medium correlations are present among items within the potentially predictive variables: age and occupation ($r = .307$); age and number of people in household ($r = -.386$); marital status and number of people in household ($r = -.372$); age and Master Gardener status ($r = .312$); Master Gardener status and the participation in program administration as a Master Gardener volunteering activity within the PMG Program ($r = .428$); Master Gardener status and teaching others as a Master Gardener volunteering activity ($r = .355$); and community service (Master Gardener activity) and other Master Gardener activities ($r = .326$).

The correlations between age, occupation, marital status, and number of people in household are indicative of the demographic characteristics of this sample. The majority of respondents in the sample are older, retired, married with a spouse present, and have two people living in the household. These variables are all intercorrelated with each

other and relates similarly to the demographic groups who tend to participate in the PMG Program.

Medium correlations also exist between Master Gardener volunteering hours and whether the respondent is an Intern or Master Gardener ($r = .314$); Master Gardener volunteering hours and Master Gardener status ($r = .480$); and Master Gardener volunteering hours and program administration as a Master Gardener volunteering activity ($r = .345$). The relationships between before volunteering hours and “I did not volunteer before” ($r = .406$) and participation in a service-learning activity and “I did not volunteer before- I did not want to” ($r = .373$) also have medium correlations.

Master Gardeners and those with higher status (Advanced, Bronze, Silver, and Gold) are more likely to volunteer more hours to the PMG Program than are Purdue Master Gardener Interns. Those who have been in the program longer and have achieved higher status may be more likely to perform administrative roles in the PMG program than those who are newer to the program. These results underline the importance of retention of experienced volunteers who take on volunteering roles with more responsibility, possibly easing the burden on Purdue Master Gardener County Coordinators.

Medium correlations are present between “I did not volunteer before- lack of time” and income ($r = .332$); “I did not volunteer before- lack of time” and “I did not volunteer before” ($r = .334$); “I did not volunteer before- no one asked me to” and income ($r = .301$); “I did not volunteer before- no one asked me to” and teaching others as a Master Gardener activity ($r = .311$); “I did not volunteer before- no one asked me to” and information booth as a Master Gardener activity ($r = .335$); “I did not volunteer before-

perceived lack of skills” and number of people in household ($r = .398$); “I did not volunteer before” and volunteering at a church as a before volunteering activity ($r = .344$); and influential adults in respondent’s life who emphasized volunteering and if respondent had volunteered as a child or young adult ($r = .411$).

Lack of time as a reason for not volunteering may be related to income because as income is either very high or very low, an individual may not have time to devote to volunteering. The presence of an adult in a respondent’s life that emphasized volunteering may have influenced if a respondent volunteered as a child or young adult.

High correlations are present between Intern or Master Gardener and years as a Master Gardener ($r = .783$); whether respondent is an Intern or Master Gardener and Master Gardener status ($r = .719$); and years as a Master Gardener and Master Gardener status ($r = .787$). Respondents who have earned Master Gardener or higher status have most likely been in the PMG Program for a greater number of years than those who have not earned a higher status.

Attitudes were found to be highly correlated with self-efficacy ($r = .676$). Prior to participation in the PMG Program, respondents already held strong, positive attitudes about volunteering and social responsibility, and attitudes did not change significantly through participation. However, respondents did report that self-efficacy increased through participation in the PMG Program. Results indicate an increase in self-efficacy through participation in the PMG Program by fostering self-efficacy through content knowledge and volunteering behaviors. Additionally, if respondents did not already hold strong, positive attitudes about volunteering, they may not have participated in the PMG

Program and not been exposed to the opportunity to become more self-efficacious to volunteer through that participation.

Research Question #4

What variables potentially predict volunteering behaviors, as measured by total volunteer hours per month, of Purdue Master Gardener Interns and Master Gardeners?

The following variables were chosen for the predictive model based upon the theoretical framework and literature review conducted for this study. While demographic variables have been shown to be predictors of volunteering behaviors (Wilson, 2000; Tang, 2006), education has been found to be a more consistent predictor of volunteering behaviors than other demographics such as age or gender (McPherson & Rotolo, 1996; Sundeen & Raskoff, 1994; Wilson & Musick, 1999). Education was included in the predictive model because it has been studied as a predictive variable in multiple volunteering contexts and found to be a consistent predictor of volunteer behavior across volunteering contexts (McPherson & Rotolo, 1996; Sundeen & Raskoff, 1994; Wilson & Musick, 1999).

Self-efficacy, a concept in the Theory of Planned Behavior, has been shown to predict volunteer behavior (Ajzen, 1991; Bandura, 1986; Bandura, 1989; Weber et al., 2004) more consistently than attitudes (Janoski et al., 1998). An assumption in the calculation of an ordinal regression is that no two variables will be too highly correlated with each other. The relationship between attitudes and self-efficacy ($r = .676$) violates

this assumption; therefore, self-efficacy was chosen to be in the model because it has been shown to be a more consistent predictor of volunteer behavior than attitudes.

Within the variable of *participation in the PMG Program*, strong correlations exist between years as a Master Gardener and whether the respondent is an Intern or Master Gardener ($r = .783$); Master Gardener status and whether the respondent is an Intern or Master Gardener ($r = .719$); and years as a Master Gardener and Master Gardener status ($r = .787$). These three variables are highly correlated with each other which violates an assumption of the ordinal regression to include all three in the predictive model. Years as a Master Gardener was chosen to be in the predictive model because Purdue Master Gardeners and those who have gained higher status (certification) are most likely volunteering more than Purdue Master Gardener Interns or those who have not achieved a higher status. While the types of Master Gardener activities provide important descriptive information about how Purdue Master Gardener Interns and Master Gardeners participate in volunteer service hours, the predictive ability is not as strong as the other variables of participation in the PMG Program. The dependent variable, total volunteer hours per month, includes those hours that are spent participating in Master Gardener activities; therefore, Master Gardener volunteering hours is not included as a predictive variable in the model.

Several prior volunteering experience variables are included in the predictive model. Responses to before volunteering activities were combined to indicate whether or not a respondent had volunteered before participation in the PMG Program. A “Yes” or “No” measure of whether or not the respondent had volunteered before participation in the PMG Program was considered to be more representative of prior volunteer behavior

than before volunteering hours, because before volunteer hours were not measured with the same answer categories as the dependent variable of total volunteer hours per month. Service-learning was included in the predictive model because it has been shown to increase social responsibility and volunteering behavior among students (Rosenberg et al., 1999; Smith, 2008; Wilson & Musick, 1999), but its predictive ability for volunteering behavior has not been measured. If the respondent had volunteered as a child or young adult was included in the predictive model, because volunteering as a child or young adult has been found to predict volunteering behaviors (Janoski et al., 1998). The predictive model also included whether or not the Purdue Master Gardener Intern and Master Gardener had influential adults in his or her life who emphasized volunteering, because studies have found that positive associations about volunteering from influential adults can help to predict future volunteering behaviors (Hamilton & Fenzel, 1988). Prior volunteering as a requirement from an employer was not included in the predictive model, because a small number of respondents reported having volunteered in that capacity ($n = 72$). Volunteering as a requirement from an employer is a new area of research and no studies were found measuring volunteering as a requirement from an employer as a predictive variable (Tangri, 2011).

Based upon results of the ordinal logistic regression, self-efficacy and years as a Master Gardener (Intern and less than a year) entered the model at statistical significance. The higher a person's self-efficacy, the more likely the person is to devote a greater number of hours per month to volunteering. This is consistent with the theoretical framework that self-efficacy (or perceived behavioral control) is a predictor of behavior. Two categories within the variable *years as a Master Gardener* (Intern and less than a

year as a Master Gardener) had an effect in the model. Results indicated that Interns and those with less than a year as a Master Gardener were less likely to devote more time to volunteering. This is indicative of the structure of the PMG Program that Purdue Master Gardener Interns (those who have passed the knowledge exam after educational training, but not yet completed the minimum requirement of volunteer service hours) and those who have been Master Gardeners for less than a year would be less likely to volunteer more hours. Purdue Master Gardener Interns and those with less than a year as Master Gardeners are most likely just beginning to volunteer.

Conclusions

Conclusion #1

Purdue Master Gardener Program is Making Positive Impacts

Based upon the responses received from the participating counties, the Purdue Master Gardener Program is successful within those counties. The Purdue Master Gardener Program Policies (Purdue Master Gardener Program State Advisory Committee, 2010), states that the purpose of the PMG Program is to “teach people more about growing plants and to more effectively extend information related to plants.” Its

specific aim is “to provide information and technical assistance in the areas of gardening and home horticulture through the use of trained and certified volunteers.”

The program does provide people with information about growing plants and facilitates the use of volunteers to disseminate horticultural information. The environmental and gardening practices taught in the educational training sessions are being used by Purdue Master Gardener Interns which may show alignment with horticultural research at the land-grant university and the information disseminated through the PMG Program; however, it was not measured through this study what practices were changed as a result of participation in the PMG Program.

The success of the program may help to validate the time, energy, and resources put toward the implementation and maintenance of the national Extension Master Gardener Program by NIFA and the PMG Program through the land-grant university system and Purdue University. The public is receiving a return on the investment of tax dollars into NIFA and the land-grant university system, because Purdue Master Gardener Interns and Master Gardeners are contributing to the community through volunteer service hours. The contribution of volunteer service hours to the community totals roughly \$173 billion to communities within the United States in one year (CNCS, 2012). Of that \$173 billion, Purdue Master Gardener Interns and Master Gardeners contribute an estimated \$2.6 million in volunteer service to their communities (“Independent Sector,” 2012; Rosie Lerner, personal communication, January 18, 2012).

Conclusion #2

Purdue Master Gardener Interns and Master Gardeners Strengthened Capacity to Volunteer and Make a Positive Impact in the Community

Attitudes have small effect sizes and a significant relationship with volunteering behavior as measured by total volunteer hours per month. The attitudes that an individual holds are important in explaining if an individual will volunteer and how many hours he or she will volunteer. According to the Theory of Planned Behavior (Ajzen, 1991), attitudes may help to predict volunteer behavior. As posited in the conceptual model, positive attitudes about volunteering do have a positive relationship to the amount of hours a Purdue Master Gardener Intern or Master Gardener volunteers. In other words, the respondents that volunteer more hours are more likely to have positive attitudes about volunteering than those who volunteer fewer hours.

Respondents demonstrate strong positive attitudes about volunteering in general, but results do not indicate a significant change in attitudes toward volunteering after participation in the PMG Program. This indicates that Purdue Master Gardener Interns and Master Gardeners already held positive views regarding volunteering and social responsibility. The program may simply give Purdue Master Gardener Interns and Master Gardeners an additional outlet for the strong attitudes about the responsibility to volunteer. In other words, Purdue Master Gardener Interns and Master Gardeners were already making positive impacts in the community before participation in the PMG Program.

When asked to explain if the program had changed attitudes about volunteering, many respondents explained that they already held strong attitudes about volunteering before participation in the program. This conclusion is in line with the finding by Janoski et al. (1998) that attitudes have a stronger influence on volunteering than volunteering has on attitudes. Generally, those that are volunteering already have positive attitudes about volunteering. This may be due to the fact that all respondents in the study are adults (over 18) and may have already formed opinions about volunteering. Also, the PMG Program may be attracting participants who already hold these attitudes.

Results of this study also indicate that most respondents were already volunteering before participation in the PMG Program. Only 9.4% of respondents had never volunteered before. This finding has strong implications for recruitment. Purdue Master Gardener County Coordinators may consider marketing to volunteers who are already volunteering with other organizations. More than half of the respondents (n = 485; 57.2%) reported having volunteered with a church or faith-based organization prior to participation in the PMG Program. Possibilities for partnerships and collaborations for events or projects may be possible as well.

Before volunteer hours have a medium relationship and a large effect size to total volunteer hours per month. This result also supports the conclusion that most respondents were volunteering before participation in the PMG Program. The significant, positive relationships and effect sizes with before volunteering activities also supports this finding. This is important because it indicates that the PMG Program is not influencing someone to volunteer; it may just be changing how one volunteers, because the participant is now volunteering with the PMG Program.

Purdue Master Gardener Interns and Master Gardeners, through the Master Gardener volunteering activities, are making a positive impact in the community. The activities are moving away from the more traditional uses of volunteers for answering phone calls on hotlines to more community outreach and education type volunteering activities. As the internet becomes more and more popular, many County Extension Offices may have stopped providing hotline answering services, because much of that same information can be found online from Cooperative Extension. To that point, the smallest number of respondents ($n = 69$) reported participating in hotlines as a volunteering activity as opposed to other volunteering activities; however, it is difficult to know the exact reason why hotlines were reported fewer times than other Master Gardener volunteering activities. Some of the more popular Master Gardener volunteering activities among respondents include community service ($n = 403$), information booth ($n = 318$), teaching others ($n = 272$), and program administration ($n = 224$).

According to the Theory of Planned Behavior, a person's self-efficacy can help to predict volunteering behaviors. Self-efficacy was found to have a small effect size, but significant relationship with volunteer behaviors, as measured by total volunteer hours per month. Self-efficacy was also reported to have increased through participation in the PMG Program, indicative of a strong, successful program. Purdue Master Gardener Interns and Master Gardeners are increasing self-efficacy through participation and continuing to contribute positively to the community.

Attitudes and self-efficacy are highly correlated. Purdue Master Gardener Interns and Master Gardeners who exhibit strong, positive attitudes about social responsibility

and volunteering are also self-efficacious to make a positive impact and to have the capacity to volunteer.

A limitation in the interpretation of these results is that Purdue Master Gardener Interns and Master Gardeners who feel positively about volunteering may have been more likely to respond to the request to participate in the questionnaire. This may have created a subset of Purdue Master Gardener Interns and Master Gardeners different from the entire population of participants in the program.

Conclusion #3

Self-efficacy and years as a Master Gardener have potential to predict total volunteer hours of Purdue Master Gardener Interns and Master Gardeners

Ordinal logistic regression was utilized to construct a predictive model based on the following seven independent variables: education, self-efficacy, years as a Master Gardener, whether volunteered before participation in the PMG Program, service-learning, volunteered as a child or young adult, and influential adults in respondent's life who emphasized volunteering.

Education was not found to be a predictor of volunteering behavior of Purdue Master Gardener Interns and Master Gardeners, as measured by total volunteer hours per month. This is inconsistent with the findings by McPherson and Rotolo (1996), Sundeen and Raskoff (1994), and Wilson and Musick (1999) that education is a consistent

predictor of volunteering behaviors in multiple contexts. According to Brady et al. (1999) and Rosenthal et al. (1998), education expands an individual's perception of the social problems that exist. The demographics of this sample may not allow for analysis of the impact of varying levels of education on total volunteer hours per month because the majority of responses are within the categories of some college experience or higher levels of education.

Several *prior volunteering experience* items were modeled as independent variables against total volunteer hours per month: before volunteering, service-learning, volunteered as a child or young adult, and influential adults in respondent's life who emphasized volunteering. Prior volunteering experience has been found to be a predictor of future volunteering behavior (Janoski et al., 1998; Mutchler et al., 2003). Janoski et al. (1998) found that prior volunteering in young adulthood helped to predict volunteering behavior in adulthood if the adolescent had formed positive attitudes about volunteering. Mutchler et al. (2003) found that among the elderly, past volunteering was a strong predictor of future volunteering. The findings of this study are inconsistent with Janoski et al. (1998) and Mutchler et al. (2003). Prior volunteering experience may not have had an effect in the predictive model because the majority of respondents had already volunteered before participation in the PMG Program; therefore, the sample did not provide enough variance within the variable.

Service-learning, volunteering as a child or young adult, and influential adults in respondent's life who emphasized volunteering allowed for variance in the sample but did not enter into the model at statistical significance. These variables were not found to be predictors of total volunteer hours per month of Purdue Master Gardener Interns and

Master Gardeners. These results do not replicate findings in other studies. Smith (2008) and Wilson and Musick (1999) found that individuals who participate in service-learning opportunities are more likely to volunteer. Respondents' possible confusion about the definition of service-learning may have led some respondents to inaccurately indicate participation in a service-learning experience. Janoski et al. (1998) found that individuals who volunteered as children or young adults also volunteer more as adults. Hamilton and Fenzel (1988) found that exposure to positive associations about volunteering may help to predict future volunteering. Recall of previous behavior may have been difficult when asking a respondent to recall experiences from childhood such as volunteering as a child or young adult and if he or she had influential adults in his or her life who emphasized volunteering.

The PMG program is an engaging program that fosters development of volunteer self-efficacy and professional and life skill development. It can serve as an example for a positive program that engages and fosters development of its participants. The PMG Program continues to increase self-efficacy through additional training and volunteer activities that keep Purdue Master Gardener Interns and Master Gardeners engaged and, as additional years are completed within the program, self-efficacy will continue to increase.

Opportunities to gain and increase self-efficacy must be provided by the PMG Program to maintain retention and to encourage Purdue Master Gardener Interns to become active volunteers in the program (earn Purdue Master Gardener certification). These opportunities could be provided through gaining content knowledge, mentoring, or

other activities in which the Purdue Master Gardener Intern and Master Gardener is able to use the skills gained in the PMG Program.

No studies were found that measure length of service in the program as an independent variable. However, this study found a significant effect of two categories of *years as a Master Gardener* (Intern and less than a year as a Master Gardener) on total volunteer hours per month. The results indicate that the respondents who have spent less time in the PMG Program are less likely to devote more hours to volunteering. This has several implications for program implementation. Retention of active volunteers who volunteer a large number of hours is important to increase quantity of volunteer service within a program. Retention of volunteers within the PMG Program may be achieved by providing further opportunities for development and increased self-efficacy, recognition of volunteers, and use of volunteers by capitalizing on the volunteer's unique set of skills. The results also highlight the importance of mentoring of new Interns by experienced Purdue Master Gardeners within the PMG Program to encourage volunteers to remain active.

Linear regression in the Rohs and Westerfield (1996) study indicated that eight variables accounted for 34% of the variance in whether or not Extension Master Gardeners volunteered within the Extension Master Gardener Program. Within this model, influence of garden club members, whether parents volunteered, personal benefits, societal value, having children, age, influence of community leader, and influence of neighbor were significant. Whether or not Purdue Master Gardener Interns and Master Gardeners had influential adults in their lives who emphasized volunteering was not significant in the model, but a similar variable, whether parents volunteered, was

found to be significant by Rohs and Westerfield (1996). No other variables were found in both studies.

Implications

Through identification of potentially predictive variables to volunteer behavior and by building a predictive model based on those potentially predictive variables, guided by the Theory of Planned Behavior and the conceptual model, this study adds to the existing literature on volunteer behaviors and the national Extension Master Gardener Program. A predictive model based upon the variables of self-efficacy and years as a Master Gardener (Intern and those who have been Master Gardeners for less than a year) provides a framework for measuring total volunteer hours per month within the Purdue Master Gardener Program and the national Extension Master Gardener Program. An individual's self-efficacy and years as a Master Gardener can be used to potentially predict his or her total volunteer hours per month. This has important implications for use within the PMG Program because administrators and coordinators can observe or measure self-efficacy and how long an individual has been in the program to potentially gauge how much participants will volunteer.

This study also adds to the literature on the national Extension Master Gardener Program and the PMG Program by describing the demographics of Purdue Master Gardener Interns and Master Gardeners and describing the participants' perceptions of the educational training portion of the program. Several findings of the study also may

have relevance to Purdue and Extension Master Gardener Programs. The fostering of self-efficacy and encouragement of new Interns by experienced volunteers in order to increase and maintain active volunteers is relevant to Extension Master Gardener Programs.

Another possible implication of the structure of this study is the use of web-based questionnaires and evaluation tools for the PMG in the future. Responses could be easily summarized through the online software and results provided to administrators in less time. This would allow quicker use of information such as demographics, perceptions, and behaviors of Purdue Master Gardener Interns and Master Gardeners. The possibility also exists to create a database of the items within this questionnaire for administrators' use in the future.

Limitations of the Study

Low reliabilities of the prior volunteering experience and participation in the PMG Program scales presents challenges in interpretation of results of the study. The low reliabilities indicate that through multiple administrations of the same questionnaire, respondents may answer differently each time. For this reason, results are interpreted cautiously. Recall of previous behaviors may have been difficult and may help to explain the low reliability for the prior volunteering experience scale. Respondents may have been able to remember some aspects of previous volunteer behavior, but had difficulty recalling other aspects. Considering that respondents are all at different stages and length

of service, it may have been years since a respondent began the program, making remembering even more difficult.

The total volunteer hours per month (dependent variable) categories were not specific enough to measure variance in the dependent variable. The capacity for the respondents to choose any numbered hour would have made the dependent variable continuous and allow other statistical tests such as a linear regression to be conducted. For example, providing a drop-down list with which the respondent had simply to choose the correct number of hours volunteered per month may have been more accurate. Also, asking the respondent to report hours volunteered per week instead of per month may have been simpler for the respondent to recall and report. The researcher could have then calculated hours per month from that data.

The questionnaire used in this study is not generalizable to other populations, because it is specific to the context of the Purdue Master Gardener Program. Therefore, it is not generalizable to other populations such as Extension Master Gardener Programs in other states or other volunteering programs. Numerous items from the questionnaire, however, may have relevance in the Extension Master Gardener Program and other volunteering contexts.

The predictive model is also not generalizable to other volunteering contexts, because years as a Master Gardener (Intern and less than a year as a Master Gardener) are specific to the PMG Program. However, the predictive model may have applications within the national Extension Master Gardener Program.

Recommendations for Future Study

One area for future study would be to research why certain demographic groups do not participate in the Purdue Master Gardener Program. The fee associated with the program for literature and supplies may not make the program accessible for people in all demographic groups. Some potential participants may also view the PMG Program as only for members of specific demographic groups, and may be too intimidated to join. If Purdue Master Gardener County Coordinators could identify why people do not participate, changes could be made in recruitment methods and materials to encourage more diversity within the PMG Program.

If participation in the PMG Program is not fostering strong, positive attitudes about volunteering, another area of study may be to identify exactly what experiences do foster strong, positive attitudes about volunteering. It may be that the PMG Program does not foster attitudes about volunteering because it is an adult service-learning program instead of one focusing on youth who may be more able to form strong attitudes about volunteering. While the strong positive attitudes about volunteering held by Purdue Master Gardener Interns and Master Gardeners is a positive aspect of the program, identifying when and how the attitudes were fostered may add to the literature on volunteering behaviors.

An additional area for study may be whether or not the PMG Program changes gardening and environmental practices of Purdue Master Gardener Interns and Master Gardeners as a result of the PMG Program. Research could also be conducted on the difference in gardening practices of Purdue Master Gardener Interns who have just completed the educational training and Purdue Master Gardeners who have been active in

the PMG Program for many years. This type of analysis will quantify if behaviors that are being taught in the educational training are being utilized as a result of the educational training or if they were utilized before participation in the PMG Program.

Positive influences of individuals in Master Gardeners' lives have been found to impact volunteering behaviors (Rohs & Westerfield, 1996). Within the PMG Program, influence of additional individuals could be studied to determine who may be agents for fostering or increasing self-efficacy in Purdue Master Gardener Interns and Master Gardeners, as self-efficacy has been found in this study to increase the total amount of volunteer hours of participants.

Summary

The first main conclusion from this study is that the Purdue Master Gardener Program is making positive impacts through effective content knowledge in educational training, appropriate logistics, and the dissemination of horticultural research by the land-grant university. This evidence may help to validate the time, energy, and resources by NIFA and Purdue University to implement and maintain the PMG Program. The second main conclusion is that most Purdue Master Gardener Interns and Master Gardeners indicated commitment to the community through strong positive attitudes about volunteering before participation in the PMG Program and already volunteered in a number of other organizations to make positive impacts in the community. Through

participation in the PMG Program, self-efficacy is increased allowing Purdue Master Gardener Interns to continue to make positive impacts.

A predictive model with the variables of self-efficacy and years as a Master Gardener (Intern and less than a year as a Master Gardener) showing significant effects in the model is this study's third main conclusion. Interns and respondents who have been Master Gardeners for less than a year are less likely to devote more time to volunteering than those who have been in the PMG Program for a higher number of years. Retention of experienced volunteers, therefore, is important to increase the total hours volunteered through the PMG Program. The model indicates that engaging programs to continue to foster and increase self-efficacy will keep Purdue Master Gardener Interns and Master Gardeners active in the PMG Program. The use of mentors to encourage new Interns may also lead to retention and increased self-efficacy of participants.

By providing a description of the characteristics of the PMG Program, it was found that educational sessions are positive experiences for participants through excellent ratings of educational training sessions and logistics such as time of day. The program is also making positive impacts in the communities in which programs operate through the numerous opportunities for which individuals volunteer. Identification of potentially predictive variables to volunteering behaviors indicated that Purdue Master Gardener Interns and Master Gardeners already volunteered before participation in the PMG Program and also increased self-efficacy through participation in the PMG Program. A predictive model was created to guide future studies in the PMG Program and the national Extension Master Gardener Program.

List of References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211. doi: 10.1016/0749-5978(91)90020-T
- Ayer, A. J. (1959). *Logical positivism*. New York, NY: The Free Press.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist*, 44(9), 1175-1184. doi: 10.1037/0003-066X.44.9.1175
- Boyer, R., Waliczek, T. M., & Zajicek, J. M. (2002). The master gardener program: Do benefits of the program go beyond improving the horticultural knowledge of the participants? *Hort Technology*, 12(3), 432-436.
- Brady, H. E., Schlozman, K. L., & Verba, S. (1999). Prospecting for participants: Rational expectations and the recruitment of political activists. *The American Political Science Review*, 93(1), 153-169.

- Chalker-Scott, L., & Collman, S. J. (2006). Washington State's Master Gardener Program: 30 years of leadership in university-sponsored, volunteer-coordinated, sustainable community horticulture. *Journal of Cleaner Production*, *14*(9-11), 988-993.
- Chapin, J. (2008). *Documenting the contributions of 4-H volunteers on 4-H programs in the north central region* [Volunteer Impact Study]. Michigan State University, Lansing.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Hillsdale, NJ: Erlbaum.
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, *16*, 297-334.
- Corporation for National and Community Service. (2012, March 29). Retrieved February 12, 2012, from <http://www.nationalservice.gov>
- Field, A. (2009). *Discovering statistics using spss* (3rd ed.). Thousand Oaks, CA: SAGE Publications.
- Furco, A., Ammon, M., Yamada, H., & Diaz-Gallego, D. (1999) . *Service Learning Survey*. University of California, Berkeley.

George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference* (4th ed.). Boston, MA: Allyn & Bacon.

Greenslade, J. H., & White, K. M. (2005). The prediction of above-average participation in volunteerism: A test of the theory of planned behavior and the volunteers functions inventory in older Australian adults. *The Journal of Social Psychology*, 145(2), 155-172.

Hall, M. H. (2001). Measurement issues in surveys of giving and volunteering and strategies applied in the design of Canada's national survey of giving, volunteering and participating. *Nonprofit and Voluntary Sector Quarterly*, 30(3), 515-526. doi: 10.1177/0899764001303009

Hamilton, S. F., & Fenzel, L. M. (1988). The impact of volunteer experience on adolescent social development: Evidence of program effects. *Journal of Adolescent Research*, 3(1), 65-80. doi: 10.1177/074355488831006

Havens, J. J., & Schervish, P. G. (1997). *Our daily bread: Findings from the first diary study on giving and receiving care*. Chestnut Hill, MA: Boston College, Social Welfare Research Institute.

Independent Sector. (2012). Independent sector. *Independent Sector*. Retrieved May 16, 2012, from <http://www.independentsector.org/>

Indiana quickfacts from the US Census Bureau. (2012, January 17). *302 Found*.

Retrieved May 4, 2012, from <http://quickfacts.census.gov/qfd/states/18000.html>

Janoski, T., Musick, M., & Wilson, J. (1998). Being volunteered? The impact of social participation and pro-social attitudes on volunteering. *Sociological Forum*, *13*(3), 495-519.

Lerner, R. (2012, March 19). A Couple Questions [E-mail to the author].

Lerner, R. (2012, January 18). MG handbook resource [E-mail to the author].

List of SOC Occupations. (2011). Retrieved September 18, 2011, from

http://www.bls.gov/oes/current/oes_stru.htm

McPherson, J., & Rotolo, T. (1996). Testing a dynamic model of social composition:

Diversity and change in voluntary groups. *American Sociological Review*, *61*(2), 179-202.

Métis. (2012). Retrieved June 30, 2012, from

<http://www.thecanadianencyclopedia.com/articles/metis>

Meyer, M. (2007). The Master Gardener program 1972-2005. *Horticultural Reviews*, *33*, 393-420.

- Mutchler, J. E., Burr, J. A., & Caro, F. G. (2003). From paid worker to volunteer: Leaving the paid work-force and volunteering in later life. *Social Forces*, 81(4), 1267-1293.
- Nagelkerke, N. J. (1991). A note on the general definition of the coefficient of determination. *Biometrika Trust*, 78(3), 691-692.
- Okun, M. A., & Sloane, E. S. (2002). Application of planned behavior theory to predicting volunteer enrollment by college students in a campus-based program. *Social Behavior and Personality*, 30(3), 243-250.
- Purdue Master Gardener Program State Advisory Committee. (2010, November). *Purdue Master Gardener Program Policies*. Purdue University, West Lafayette, IN.
- Qualtrics (Version 12,018) [Computer software]. (2012). Retrieved from <http://www.itap.purdue.edu/learning/tools/qualtrics/login.cfm>
- Relf, D., & McDaniel, A. (1994). Assessing Master Gardener's priorities. *Hort Technology*, 4(2), 181-184.
- Rohs, F. R., & Westerfield, R. R. (1996). Factors influencing volunteering in the Master Gardener Program. *Hort Technology*, 6(3), 281-285.

Rosenberg, S. L., McKeon, L. M., & Dinero, T. E. (1999). Positive peer solutions: One answer for the rejected student. *Phi Delta Kappan*, *81*(2), 114-118.

Rosenthal, S., Feiring, C., & Lewis, M. (1998). Political volunteering from late adolescence to young adulthood. *Journal of Social Issues*, *54*(3), 477-493. doi: 10.1111/j.1540-4560.1998.tb01231.x

Ruppert, K. C., Bradshaw, J., & Stewart, A. Z. (1997). The Florida Master Gardener Program: History, use, and trends. *Hort Technology*, *7*(4), 348-353.

Schaefer, R., & Dillman, D. A. (1998). Development of a standard email methodology: Results of an experiment. *Public Opinion Quarterly*, *62*(3), 378-397.

Schrock, D. S., Meyer, M., Ascher, P., & Snyder, M. (2000). Reasons for becoming involved as a Master Gardener. *Hort Technology*, *10*(3), 626-630.

Shannon, D. M., Johnson, T. E., Searcy, S., & Lott, A. (2002). Using electronic surveys: Advice from survey professionals. *Practical Assessment, Research & Evaluation*, *8*(1). Retrieved January 11, 2012, from <http://pareonline.net/getvn.asp?v=8&n=1>

- Smith, M. C. (2008). Does service learning promote adult development? Theoretical perspectives and directions for research. *New Directions for Adult and Continuing Education*, (118), 5-15. doi: 10.1002/ace.291
- Steinberg, K. S., Rooney, P. M., & Chin, W. (2002). Measurement of volunteering: A methodological study using Indiana as a test case. *Nonprofit and Voluntary Sector Quarterly*, 31(4), 484-501. doi: 10.1177/0899764002238097
- Strong, R., & Harder, A. (2010). Motivational orientations of adults participating in a Cooperative Extension Master Gardener program. *Journal of Extension*, 8(4). Retrieved from www.joe.org
- Sundeen, R. A., & Raskoff, S. A. (1994). Volunteering among teenagers in the United States. *Nonprofit Volunteer Sector Quarterly*, 23(4), 383-403. doi: 10.1177/089976402300407
- Tang, F. (2006). What resources are needed for volunteerism? A life course perspective. *Journal of Applied Gerontology*, 25, 375-390. doi: 10.1177/0733464806292858
- Tangri, A. (2011). Employee volunteering behavior (Unpublished master's thesis). California State University. Retrieved March 4, 2012, from <http://csus>

dspace.calstate.edu/xmlui/bitstream/handle/10211.9/1143/Employee%20Volunteering%20Behavior.pdf?sequence=1

Warburton, J., & Terry, D. J. (2000). Volunteer decision making by older people: A test of a revised theory of planned behavior. *Basic and Applied Social Psychology, 22*(3), 245-257. doi: 10.1207/S15324834BASP2203_11

Weber, P., Weber, J. E., Sleeper, B. J., & Schneider, K. C. (2004). Self-efficacy toward service, civic participation, and the business student: Scale development and validation. *Journal of Business Ethics, 49*(4), 359-369.

Wilson, J. (2000). Volunteering. *Annual Review of Sociology, 26*(1), 215-240. doi: 10.1146/annurev.soc.26.1.215

Wilson, J., & Musick, M. (1999). The effects of volunteering on the volunteer. *Law and Contemporary Problems, 62*(4), 141-168.

Wilson, J. C., & Newman, M. E. (2011). Reasons for volunteering as a Mississippi Master Gardener. *Journal of Extension, 49*(5). Retrieved from www.joe.org

APPENDICES

Appendix A: Email to Purdue Master Gardener County Coordinators

May 2, 2011

Dear Master Gardener Coordinators,

Hello! My name is Elizabeth Gall and I am a graduate student in the Youth Development and Agricultural Education department at Purdue. I am assessing the current evaluation tool available for use at the end of the Master Gardener course. I will be working with Kathryn Orvis, who will serve as my advisor, Rosie Lerner, Steve McKinley, and Mark Tucker.

I would like to get feedback from all of you on what we can improve and what is working well as we move towards a new evaluation/assessment. I, along with my committee, will be creating a new assessment to be used at the end of the Master Gardener course to measure other impacts such as volunteering behavior after the course and attitudes on social responsibility. The data we receive will be used for my thesis on whether or not social responsibility in participants is influenced by the Master Gardener course.

It is essential to receive your feedback as the County MG Coordinator; so, we can create an assessment to accurately gain insight into the far-reaching benefits of the Master Gardener program. As you well know, the benefits go far beyond merely increasing horticultural knowledge of the participants. We would like to see in what other ways your participants, and your communities, may be impacted by the work the Master Gardeners do. Participation is voluntary, your answers are completely anonymous, and will not be linked back to you or your county in any way. You may also exit the survey at any time if you do not wish to continue. You must be 18 years of age or older to participate. Your feedback is very much appreciated. I believe that, with your help, we can create a great assessment to allow us all to see the wonderful benefits of the Master Gardener program.

Please complete the survey by May 16th. I will be sending a reminder email next week about the deadline.

Please follow the link to the survey:

Sincerely,

Elizabeth Gall
Graduate Student
Purdue University, West Lafayette, IN
Youth Development and Agricultural Education

Appendix B: Feedback Survey on Program Evaluation Tool

Master Gardener Coordinator Questionnaire

1. Do you currently use the evaluation provided by Purdue Cooperative Extension for the Master Gardener program?

-Yes

-No (if no, skip down to question #6)

2. Do you find the current evaluation tool useful for gaining feedback on the program?

-Yes

-No

3. What do you do with the responses you receive from the evaluation?

-Nothing

-Collect and send data to State office

-Collect, summarize, and send data to State office

-Collect and keep for my county's use

-Other _____

4. There is currently a question on the evaluation about environmental stewardship- do you feel this is an important impact to assess?

-Yes

-No

5. I am considering adding questions to the evaluation on the following topics: Checkmark the box if you agree with adding a question on each particular topic:

Social Responsibility (For example- Do you believe it is every citizen's responsibility to benefit society in some way?; Do you feel it is more important to give money than time?; Do you feel it is more important to give time than money?)

Volunteering (For example- Do you believe it is every citizen's responsibility to volunteer in his or her community?; Where do you volunteer?; How many hours per month do you volunteer?)

Community Pride/ View of Community (For example- Has your view of the community changed since participating in the Master Gardener course?)

Philanthropy (For example- Do you donate more money to charitable organizations since participating in the Master Gardener course?)

Service-Learning (For example- Have you participated in a service-learning (a well thought out and organized experience where the participant takes part in learning and through a needs assessment performs service in the community to further reflect on what he or she has learned) course in the past?)

6. If you have not used the current evaluation, what is the reason?

-Too long

-Not enough time

-Do not feel it gives me any useful information

-Other _____

7. Please follow link to view current evaluation and proposed changes.

8. Are there any additional questions you think should be asked to describe the impact?

Appendix C: Purdue Master Gardener Program Evaluation Tool

**Evaluation**

You are not required to fill out this form; however, you can help us improve the program with your comments. Thank you!

PART A - IMPACT OF THE MASTER GARDENER CLASS

1. Did the Master Gardener course (Circle one),
 - a) Meet your expectations?
 - b) Exceed your expectations?
 - c) Not meet your expectations?
 List any other comments on your expectations:

2. Would you recommend this Master Gardener class to others? Yes or No. (Circle one)

3. Did the class help you to save money? Or, do you think it will save you money in the future?

4. Did the MG course help you to be a better environmental steward in regards to gardening and/or yard care? Yes or No. (Circle one) Please cite any specific examples. Circle one or more: (pesticide use, composting, grass recycling) and/or give your own example.

5. Did the MG class help you to become a better gardener? Yes or No. (Circle one)

6. What is one piece of information that you learned that you found to be particularly helpful?

7. Have you changed any gardening practices as a result of this course? (Circle one)
 - a) Yes, I already have.
 - b) No, but I intend to change a practice next season.
 - c) No, I do not expect to change any practices.
 If yes, what was one of them?

8. Please give any other comments you would like on the class.

(CONTINUED ON REVERSE SIDE)

PART B - GENERAL THOUGHTS ON THE CLASS / HOW CAN THE CLASS BE IMPROVED

9. How would you rate the facilities: good, fair or poor? (Circle one)
 (Includes the room space, tables, chairs, acoustics, lighting, etc.)

10. Could anything be done to improve the existing meeting room?

11. Was the registration fee too low, too high or about right for what you received? (Circle one)

12. Was the course worth your time and money? Yes or No. (Circle one)

13. Please rank the following:

	Excellent		Average		Poor
Time of Year	5	4	3	2	1
Time of Day	5	4	3	2	1
Handout Materials	5	4	3	2	1
Instructors:	5	4	3	2	1
Classes:					
Orientation	5	4	3	2	1
Soil Science	5	4	3	2	1
Plant Nutrition	5	4	3	2	1
Plant Science	5	4	3	2	1
Plant Disease Diagnosis/Control	5	4	3	2	1
Insect Pest Diagnosis/Control	5	4	3	2	1
Weed Identification/Control	5	4	3	2	1
Pesticide Safety/Pesticide Alternatives	5	4	3	2	1
Woody Ornamentals	5	4	3	2	1
Vegetables	5	4	3	2	1
Herbaceous Ornamentals	5	4	3	2	1
Home Lawns	5	4	3	2	1
Animal Pests	5	4	3	2	1
_____	5	4	3	2	1
_____	5	4	3	2	1
_____	5	4	3	2	1

14. Do you think any topics were not covered that should have been? If so, what topics?

15. Please evaluate the speaker(s). Should the guest speaker(s) be asked to speak again at a future class?

16. Is there anything else that can be done to help improve the Master Gardener class next time?

Appendix D: Email to Participants of Pilot Test

September 26, 2011

Hello Master Gardeners,

My name is Elizabeth Gall and I am a graduate student in Youth Development and Agricultural Education at Purdue University working with Kathryn Orvis and Rosie Lerner. For my thesis research, I am interested in learning about some of the impacts of the Master Gardener program. In order to do that, I have created a questionnaire and need to have a small group of people test it and your Master Gardener group has been chosen.

If you could please follow the link below to complete the questionnaire, I would really appreciate the feedback before the questionnaire is sent out to the rest of the Purdue Master Gardeners. It will take about 30 minutes to complete but you will earn 1 hour of volunteer service for completing the questionnaire.

All answers are confidential and will not be linked back to you in any way.

On each page, you will be asked to provide any feedback you may have about the questions on that page. This is very useful for me in order to make any changes that may be necessary.

The link to the questionnaire is:

Please complete the survey by Monday, October 10th.

Thank you very much! Your help is very much appreciated!

Sincerely,

Elizabeth Gall
Graduate Student
Youth Development and Agricultural Education

Appendix E: Pilot Questionnaire

PILOT QUESTIONNAIRE

Intro- This questionnaire has been created to research volunteering behaviors of Master Gardeners as part of my thesis research. You will be asked questions about the Master Gardener Class, your attitudes about volunteering, and your volunteering behaviors.

Please answer the questions honestly. Your responses are completely anonymous and will not be linked back to you in any way. You may also quit taking the questionnaire at any time.

1. Are you an Intern or Master Gardener? (An intern is someone who has passed the class, but has not completed all the necessary hours to gain certification. A Master Gardener is someone who has completed the class, hours, and gained certification.)

-Intern

-Master Gardener (If Master Gardener, skip to # 17)

2. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

3. Why did you choose to become a Master Gardener? (Choose all that Apply.)

-Increase Horticultural Knowledge

-Gain Volunteer Experience

-Participating with a Friend or Family Member

-Hobby

-Other _____

4. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

5. What is your level of agreement with the following statements?

(Strongly Disagree, Disagree, Slightly Disagree, Slightly Agree, Agree, Strongly Agree, No Opinion)

The Master Gardener Program helped me to become a better gardener.

The Master Gardener Program helped me to become a better environmental steward in regards to gardening and/or yard care.

The Master Gardener program helped me to save money.

The Master Gardener program was worth my time and money.

6. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

7. Please cite any specific examples of being a better environmental steward. (Choose all that Apply.)

-Reduction in Pesticide Use

-More Responsible Plant Choices (For example, but not limited to, selecting plants best adapted to site conditions)

-Mulching/ Composting

-Grass Recycling

-Using Less Water/ More Efficient Watering Practices

-Use of Rain Barrels/ Rain Gardens

-Other _____

8. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

9. For the following question please consider what gardening practices you have begun or adapted since enrolling in the Master Gardener Program.

Please indicate your level of agreement of having begun or adapted the following gardening practices as a result of participating in the Master Gardener Program.

(Strongly Disagree, Disagree, Slightly Disagree, Slightly Agree, Agree, Strongly Agree, n/a)

Plant Placement (Right Plant, Right Place)

Crop Rotation

More Effective Land Use

Best Practices for Soil Preparation

Plant Choice (Avoiding Invasives/ Including Natives)

Reduction/ More Responsible Pesticide Use

Mulching/ Composting

Saving Seeds/ Sharing Plants/ Plant Exchange

Water Usage/ More Efficient Irrigation/ Less Water Intensive Plants

Other _____

10. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

11. Estimate how much money the Master Gardener Program has helped you save per year.

-\$0-100

-\$101-250

-\$251-500

-\$501 and up

-The program has not helped me save money.

-The program has not helped me save money, but I think it will in the future.

12. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

13. Please rank these items pertaining to the Master Gardener class on the following scale (5=excellent, 3=average, 1=poor):

Time of Year

Time of Day

Handout Materials

Facilities

Instructors

14. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

15. Please rank the Master Gardener classes on the following scale (5=excellent, 3=average, 1=poor):

Orientation

Soil Science

Plant Nutrition

Plant Science

Plant Disease Diagnosis/ Control

Insect Pest Diagnosis/ Control

Weed Identification/ Control

Pesticide Safety/ Pesticide

Woody Ornamentals

Vegetables

Herbaceous Ornamentals

Home Lawns

Animal Pests (if Intern, skip to # 18)

16. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

17. How many years have you been a Master Gardener (A Master Gardener is someone who has completed the class time and hours necessary to gain certification)?

-Less than 1 year

-# of years (If 1 year or more) _____

18. What is your Master Gardener status?

-Intern

-Master Gardener

-Advanced

-Bronze

-Silver

-Gold

19. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

20. For the purposes of this survey, volunteering is defined as actively giving of your time and effort to your community (not to family members or friends) without monetary compensation.

Please indicate your views by choosing the answer that best describes your feelings.

Please indicate your level of agreement for the following statements...

(Strongly Disagree, Disagree, Slightly Disagree, Slightly Agree, Agree, Strongly Agree, No Opinion)

I believe it is a citizen's responsibility to participate in community service.

People should find time to contribute to their communities.

I believe that all members of a community should volunteer.

My belief that a citizen should volunteer has been strengthened as result of participating in the Master Gardener Program.

21. Please Explain your Answer to the Last Statement...

22. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

23. Please indicate your views by choosing the answer that best describes your feelings.

Please indicate your level of agreement for the following statements...

(Strongly Disagree, Disagree, Slightly Disagree, Slightly Agree, Agree, Strongly Agree, No Opinion)

I believe it is important for me to participate in community service.

I believe I have a responsibility to give back to my community.

Involvement in programs to improve my community is important.

My belief that I should participate in community service has been strengthened as a result of participating in the Master Gardener Program.

24. Please Explain your Answer to the Last Statement...

25. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

26. Please indicate your views by choosing the answer that best describes your feelings.

Please indicate your level of agreement for the following statements....

(Strongly Disagree, Disagree, Slightly Disagree, Slightly Agree, Agree, Strongly Agree, No Opinion)

I should volunteer my time to support my community.

I believe it is important for me to give back to my community by giving of my knowledge.

I believe it is important for me to give back to my community by giving of my resources.

My belief that I should give to my community has been strengthened as a result of participating in the Master Gardener Program.

27. Please Explain your Answer to the Last Statement...

28. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

29. Please indicate your views by choosing the answer that best describes your feelings.

Please indicate your level of agreement for the following statements...

(Strongly Disagree, Disagree, Slightly Disagree, Slightly Agree, Agree, Strongly Agree, No Opinion)

I have a positive view of my community.

I trust in the strength of my community.

My view of my community has been strengthened as a result of participating in the Master Gardener Program.

30. Please Explain your Answer to the Last Statement...

31. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

32. Please indicate your views by choosing the answer that best describes your feelings.

Please indicate your level of agreement for the following statements...

(Strongly Disagree, Disagree, Slightly Disagree, Slightly Agree, Agree, Strongly Agree, No Opinion)

I can have a positive impact on social problems.

I have confidence in my ability to help others.

I can make a difference in my community.

Each of us can make a difference in the lives of the less fortunate.

My belief that I can make a positive impact in my community has been strengthened as a result of participating in the Master Gardener Program.

33. Please Explain your Answer to the Last Statement...

34. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

35. Please indicate your views by choosing the answer that best describes your feelings.

Please indicate your level of agreement for the following statements...

(Strongly Disagree, Disagree, Slightly Disagree, Slightly Agree, Agree, Strongly Agree, No Opinion)

I feel I have the time to volunteer.

I believe I can make time to volunteer.

My belief that I can make time to volunteer has been strengthened as a result of participating in the Master Gardener Program.

36. Please Explain your Answer to the Last Statement...

37. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

38. Please indicate your views by choosing the answer that best describes your feelings.

Please indicate your level of agreement for the following statements...

(Strongly Disagree, Disagree, Slightly Disagree, Slightly Agree, Agree, Strongly Agree, No Opinion)

I believe I have what it takes to volunteer.

I believe I have the skills necessary to volunteer.

I feel that I am able to gain the skills necessary to volunteer.

My belief that I have the skills necessary to volunteer has been strengthened as a result of participating in the Master Gardener Program.

39. Please Explain your Answer to the Last Statement...

40. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

41. Volunteering consists of actively giving of your time and effort to your community (not to family members or friends) without monetary compensation.

Where did you volunteer BEFORE participating in the Master Gardener Program? (Choose all that Apply.)

- Civic, political, or professional organization
- 4-H Youth Development Program
- Educational or other youth serving organization
- Environmental organization
- Animal care organization
- Hospital or health care organization
- Public safety organization
- Sport, hobby, cultural, or arts group
- Social or community service group
- Church or Faith-based organization
- Other _____
- I did not volunteer before participating in the Master Gardeners.

42. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

43. BEFORE participating in the Master Gardeners, on average, how many hours did you volunteer per month?

- 1-10 hours per month

- 11-20 hours per month
- 21-30 hours per month
- 31-40 hours per month
- 41-50 hours per month
- 50 or more hours per month
- I did not volunteer before participating in the Master Gardeners.

44. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

45. If you had not volunteered BEFORE participating in the Master Gardener Program, why?

- Lack of Time
- Perceived Lack of Skills
- No One Asked Me To
- Did Not Want To
- Other _____
- Not Applicable

46. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

47. Had you participated in a service-learning opportunity BEFORE participating in the Master Gardeners? (Service-learning is defined as a well-thought out and organized experience where the participant takes part in learning and performs service in the community to expand on that learning)

- Yes

-No

-Not sure

48. If yes, please explain...

49. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

50. Volunteering consists of actively giving of your time and effort to your community (not to family members or friends) without monetary compensation.

On average, how many hours per month do you currently volunteer (including your Master Gardener hours)?

51. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

52. How many different organizations do currently volunteer with?

-1-2

-3-4

-5-6

-More than 6

53. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

54. Where do you currently volunteer? (Choose all that Apply.)

- Master Gardener activities
- Civic, political, or professional organization
- 4-H Youth Development Program
- Educational or other youth serving organization
- Environmental organization
- Animal care organization
- Hospital or health care organization
- Public safety organization
- Sport, hobby, cultural, or arts group
- Social or community service group
- Church or Faith-based organization
- Other _____
- I do not volunteer OTHER THAN Master Gardener Activities

55. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

56. Did the Master Gardener Program change your volunteering behavior? (Did not require response)

-Yes

-No

57. If you did not volunteer before participating in the Master Gardeners, what about the Master Gardener Program changed that? (Did not require response)

58. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

59. In the past year, I have participated in the following volunteer activities. (Choose all that Apply.)

- Construction of a building or apparatus for use by the less fortunate
- Visiting someone in the hospital or hospice (not family member or friend)
- Conservation or restoration of natural areas
- Neighborhood or river cleanup
- Meals on Wheels or other food service to the less fortunate
- Teaching someone a skill (not family member or friend)
- Mentoring (such as Big Brothers, Big Sisters)

60. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

61. What kind of Master Gardener activities are you currently/ have volunteered for in the past year? (Choose all that Apply.)

- Program administration (committee work, reporting, etc.)
- Community service (non-educational, such as beautification projects)
- Info booth (fair, etc.)
- Communications (newsletter, etc.)
- Demonstration garden
- Hotline
- Teaching others
- Working with/ teaching youth

-Other _____

62. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

63. How many hours per month are you volunteering for your Master Gardener hours?

-0-10 hours per month

-11-20 hours per month

-21-30 hours per month

-31-40 hours per month

-41-50 hours per month

-50 or more hours per month

64. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

65. Did you volunteer as a child or young adult (under 18 years of age)? (Did not require response)

-Yes

-No

66. Did influential adults in your life emphasize the importance of volunteering? (Did not require response)

-Yes

-No

67. Have you completed volunteer hours as a requirement from an employer? (Did not require response)

-Yes

-No

68. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

All Demographic Questions did not require a response.

69. What is your gender?

-Male

-Female

70. How old are you?

-18-24

-25-34

-35-44

-45-54

-55-64

-65-74

-75-84

-85 or over

71. What is your highest level of education achieved?

- Some High School
- High School Diploma or GED Equivalent
- Some College Experience
- Associate Degree
- Bachelor Degree
- Master Degree
- Doctorate Degree

72. What is your occupation?

- Management
- Business and Financial Operations
- Computers and Mathematics
- Architecture and Engineering
- Life, Physical, and Social Science
- Community and Social Service
- Legal
- Education, Training, and Library
- Arts, Design, Entertainment, Sports, and Medicine
- Healthcare Practitioners and Technical
- Healthcare Support
- Protective Service
- Food Preparation and Serving Related
- Building and Grounds Cleaning and Maintenance
- Personal Care and Service

- Sales and Related
- Office and Administrative Support
- Farming, Fishing, and Forestry
- Construction and Extraction
- Installation, Maintenance, and Repair
- Production
- Transportation and Material Moving
- Military
- Stay-at Home Parent
- Retired
- Other _____

73. What is your Gross Estimated Household Income (please keep in mind that all answers are confidential)?

- \$0-\$20,000
- \$20,001-\$40,000
- \$40,001-\$60,000
- \$60,001-\$80,000
- \$80,001-\$100,000
- \$100,001-\$120,000
- \$120,001-\$140,000
- \$140,001-\$160,000
- \$160,001 or more

74. What is your marital status?

- Married, spouse present
- Married, spouse absent, separated
- Married, spouse absent, other
- Widowed
- Divorced
- Never Married

75. How many people live in your household?

- 1 (yourself)
- 2
- 3
- 4-6
- 7 or more

76. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

77. How do you describe yourself (please keep in mind that all answers are confidential)?

Race

- Asian/ Pacific Islander
- Black/ African American
- Native American/ Alaskan Native
- White/ Caucasian

-Other _____

Ethnicity

-Hispanic

-Non-Hispanic

78. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

79. In what county did you participate in the Master Gardener Program? (Drop-down menu was included with all counties in Indiana) (Did require a response)

80. If there is any feedback you would like to leave about the question(s) on this page, please leave it in the space provided below...

Appendix F: Email to Participants of the Final Questionnaire

December 6, 2011

Hello Master Gardeners,

My name is Elizabeth Gall and I am a graduate student in Youth Development and Agricultural Education at Purdue University working with Kathryn Orvis and Rosie Lerner. For my thesis research, I am interested in learning about some of the impacts of the Master Gardener program. In order to do that, I have created a questionnaire. The questionnaire will take about 30 minutes to complete and you will receive an hour of volunteer service for your time. At the end of the questionnaire, you will be prompted to print the last page as a record of your volunteer time.

I hope you will take the time to participate in the questionnaire. Please follow the link below to complete it.

All answers are confidential and will not be linked back to you in any way. You may also exit the questionnaire at any time.

The link to the questionnaire is:

Please complete the survey by Wednesday, December 21st.

Thank you very much! Your help is very much appreciated!

Sincerely,

Elizabeth Gall

Appendix G: Final Questionnaire

PURDUE
UNIVERSITY

This questionnaire has been created to research volunteering behaviors of Master Gardeners as part of my thesis research. **You will be asked questions about the Master Gardener Class, your attitudes about volunteering, and your volunteering behaviors.**

Please answer the questions honestly. Your responses are completely anonymous and will not be linked back to you in any way. You may also quit taking the questionnaire at any time.

If you are unable to complete the questionnaire in one sitting, you may exit and return to it later. When you return to the session you must be on the same computer as in the previous session.

Thank you for your time.

Are you an Intern or Master Gardener? (An intern is someone who has passed the class, but has not completed all the necessary hours to gain certification. A Master Gardener is someone who has completed the class, hours, and gained certification.)

Intern
 Master Gardener

0% 100%

>>

Survey Powered By [Qualtrics](#)

PURDUE
UNIVERSITY


What is your level of agreement with the following statements?

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
The Master Gardener Program helped me to become a better gardener.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Master Gardener Program helped me to become a better environmental steward in regards to gardening and/or yard care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Master Gardener program helped me to save money.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Master Gardener program was worth my time and money.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

0% 100%


<< >>

Survey Powered By [Qualtrics](#)




Please cite any specific examples of being a better environmental steward. (Choose all that Apply.)

- Reduction in Pesticide Use
- More Responsible Plant Choices (For example, but not limited to, less non-natives or less area planted in lawn)
- Mulching/ Composting
- Grass Recycling
- Using Less Water/ More Efficient Watering Practices
- Use of Rain Barrels/ Rain Gardens
- Other




Survey Powered By [Qualtrics](#)

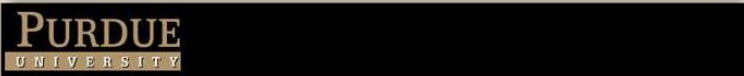


Use the following gardening practice:

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree	n/a
Plant Placement/ Crop Rotation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lawn Care/ Cutting Grass at 3"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
More Effective Land Use/ Less Water-Intensive Plants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Testing Soil	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Soil Preparation Practices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Plant Choice (Less Invasive/ Non-Native)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reduction/ More Responsible Pesticide Use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mulching/ Composting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Saving Seeds/ Plants for the Following Year	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using Less Water/ More Efficient Watering Practices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>




Survey Powered By [Qualtrics](#)

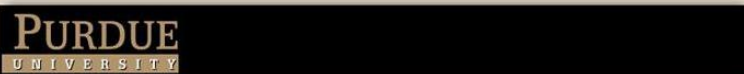


Estimate how much money the Master Gardener Program has helped you save per year.

- \$0-100
- \$101-250
- \$251-500
- \$501 and up
- The program has not helped me save money.
- The program has not helped me save money, but I think it will in the future.




Survey Powered By [Qualtrics](#)



Please rate these items pertaining to the Master Gardener class on the following scale (5=excellent, 3=average, 1=poor):

	5=Excellent	4	3=Average	2	1=Poor
Time of Year	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Time of Day	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Handout Materials	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Facilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Instructors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>




Survey Powered By [Qualtrics](#)

PURDUE UNIVERSITY

Please rate the Master Gardener **classes** on the following scale (5=excellent, 3=average, 1=poor):

	5=Excellent	4	3=Average	2	1=Poor
Orientation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Soil Science	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Plant Nutrition	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Plant Science	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Plant Disease Diagnosis/ Control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Insect Pest Diagnosis/ Control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Weed Identification/ Control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pesticide Safety/ Pesticide	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Woody Ornamentals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vegetables	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Herbaceous Ornamentals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Home Lawns	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Animal Pests	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

0%  100%

<< >>

Survey Powered By [Qualtrics](#)

PURDUE UNIVERSITY


For the purposes of this survey, volunteering is defined as actively giving of your time and effort to your community (not to family members or friends) without monetary compensation.

Please indicate your views by choosing the answer that **best describes** your feelings.

Please indicate your level of agreement for the following statements...

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree	No Opinion
I believe it is a citizen's responsibility to participate in community service.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People should find time to contribute to their communities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe that all members of a community should volunteer.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My belief that a citizen should volunteer has been strengthened <u>as a result of participating in the Master Gardener Program.</u>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please Explain your Answer to the Last Statement (optional).

0%  100%

<< >>

Survey Powered By [Qualtrics](#)

PURDUE UNIVERSITY

Please indicate your views by choosing the answer that **best describes** your feelings.

Please indicate your level of agreement for the following statements...

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree	No Opinion
I believe I have a responsibility to give back to my community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Involvement in programs to improve my community is important.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe it is important for me to give back to my community by giving of my knowledge.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe it is important for me to give back to my community by giving of my resources.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My belief that I should participate in community service has been strengthened as a result of participating in the Master Gardener Program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please Explain your Answer to the Last Statement (optional).

0% 100%

<< >>

Survey Powered By [Qualtrics](#)

PURDUE UNIVERSITY

Please indicate your views by choosing the answer that **best describes** your feelings.

Please indicate your level of agreement for the following statements...

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree	No Opinion
I can have a positive impact on social problems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have confidence in my ability to help others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can make a difference in my community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Each of us can make a difference in the lives of the less fortunate.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My belief that I can make a positive impact in my community has been strengthened as a result of participating in the Master Gardener Program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please Explain your Answer to the Last Statement (optional).

0% 100%

<< >>


Survey Powered By [Qualtrics](#)

PURDUE UNIVERSITY

Please indicate your views by choosing the answer that **best describes** your feelings.
Please indicate your level of agreement for the following statements...

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree	No Opinion
I have the time to volunteer.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can make time to volunteer.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the skills necessary to volunteer.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am able to gain the skills necessary to volunteer.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My belief that I have the capacity to volunteer has been strengthened as a result of participating in the Master Gardener Program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please Explain your Answer to the Last Statement (optional).

0%  100%

<< >>


Survey Powered By [Qualtrics](#)

PURDUE UNIVERSITY

Volunteering consists of actively giving of your time and effort to your community (not to family members or friends) without monetary compensation.

Where did you volunteer **BEFORE** participating in the Master Gardener Program? (Choose all that Apply.)

- Civic, political, or professional organization (Including, but not limited to, American Legion, Kiwanis, Rotary Club)
- 4-H Youth Development Program
- Educational or other youth serving organization (Including, but not limited to, Big Brothers, Big Sisters, Boy Scouts)
- Environmental organization (Including, but not limited to, participating in neighborhood or environmental cleanups, restoration of a natural area)
- Animal care organization (Including, but not limited to, Humane Society)
- Hospital or health care organization (Including, but not limited to, visiting someone in the hospital (not a family member or friend))
- Public safety organization (Including, but not limited to, volunteering as a crossing guard)
- Sport, hobby, cultural, or arts group (Including, but not limited to, volunteering at an art museum or historical society)
- Social or community service group (Including, but not limited to, Food Bank, Meals on Wheels, Habitat for Humanity)
- Church or Faith-based organization (Including, but not limited to, volunteering as a Sunday School teacher)
- Other
- I DID NOT volunteer before participating in the Master Gardener Program.

0%  100%


<< >>

Survey Powered By [Qualtrics](#)

PURDUE
UNIVERSITY

BEFORE participating in the Master Gardener Program, on average, how many hours did you volunteer **per month**?

- 1-10 hours per month
- 11-20 hours per month
- 21-30 hours per month
- 31-40 hours per month
- 41-50 hours per month
- 50 or more hours per month
- I DID NOT volunteer before participating in the Master Gardener Program.

0%  100%


<< >>

Survey Powered By [Qualtrics](#)

PURDUE
UNIVERSITY

Had you participated in a service-learning opportunity **BEFORE** participating in the Master Gardeners? (Service-learning is defined as a well-thought out and organized experience where the participant takes part in learning and performs service in the community to expand on that learning)

- Yes
- No

0%  100%

<< >>


Survey Powered By [Qualtrics](#)

PURDUE
UNIVERSITY

Volunteering consists of actively giving of your time and effort to your community (not to family members or friends) without monetary compensation.

On average, how many hours **per month** do you **currently** volunteer (including your Master Gardener hours)?

- 1-5 hours per month
- 6-14 hours per month
- 15-23 hours per month
- 24-32 hours per month
- 33-41 hours per month
- 42-50 hours per month
- 51 or more hours per month

0%  100%


<< >>

Survey Powered By [Qualtrics](#)

PURDUE
UNIVERSITY

How many different organizations do you **currently** volunteer with?

- 1-2
- 3-4
- 5-6
- More than 6
- I DO NOT volunteer with any organizations

0%  100%


<< >>

Survey Powered By [Qualtrics](#)

PURDUE UNIVERSITY

Where do you **currently** volunteer? (Choose all that Apply.)

- Master Gardener activities
- Civic, political, or professional organization (Including, but not limited to, American Legion, Kiwanis, Rotary Club)
- 4-H Youth Development Program
- Educational or other youth serving organization (Including, but not limited to, Big Brothers, Big Sisters, Boy Scouts)
- Environmental organization (Including, but not limited to, participating in neighborhood or environmental cleanups, restoration of a natural area)
- Animal care organization (Including, but not limited to, Humane Society)
- Hospital or health care organization (Including, but not limited to, visiting someone in the hospital (not a family member or friend))
- Public safety organization (Including, but not limited to, volunteering as a crossing guard)
- Sport, hobby, cultural, or arts group (Including, but not limited to, volunteering at an art museum or historical society)
- Social or community service group (Including, but not limited to, Food Bank, Meals on Wheels, Habitat for Humanity)
- Church or Faith-based organization (Including, but not limited to, volunteering as a Sunday School teacher)
- Other
- I do not volunteer AFTER participating in the Master Gardener Program.

0%  100%

<< >>


Survey Powered By [Qualtrics](#)

PURDUE UNIVERSITY

Did the Master Gardener Program change your volunteering behavior?

Yes
 No

If you did not volunteer before participating in the Master Gardener Program, what about your participation in the Master Gardener Program changed that? (optional)

0%  100%


<< >>

Survey Powered By [Qualtrics](#)

PURDUE
UNIVERSITY

What kind of Master Gardener activities are you currently/ have volunteered for in the past year? (Choose all that Apply.)

- Program administration (Including, but not limited to, board member, committee work, reporting, etc.)
- Community service (non-educational, such as beautification projects)
- Info booth (fair, etc.)
- Communications (newsletter, etc.)
- Demonstration garden
- Hotline
- Teaching others
- Working with/ teaching youth
- Other

0%  100%

<< >>

Survey Powered By [Qualtrics](#)


PURDUE
UNIVERSITY

How many hours per month are you volunteering for your Master Gardener hours?

- 1-10 hours per month
- 11-20 hours per month
- 21-30 hours per month
- 31-40 hours per month
- 41-50 hours per month
- 50 or more hours per month
- I DO NOT volunteer for my Master Gardener hours

Do you turn in your Master Gardener hours?

- Yes
- No

0%  100%

<< >>

Survey Powered By [Qualtrics](#)

PURDUE
UNIVERSITY

Did you volunteer as a child or young adult (under 18 years of age)?


Yes
 No

Have you completed volunteer hours as a requirement from an employer?

Yes
 No

Did influential adults in your life emphasize the importance of volunteering?

Yes
 No

0%  100%

<< >>

Survey Powered By [Qualtrics](#)

PURDUE
UNIVERSITY

What is your gender?

Male

Female

How old are you?

18-24

25-34

35-44

45-54

55-64

65-74

75-84

85 or over

I prefer not to answer this question

What is your highest level of education achieved?

Some High School

High School Diploma or GED Equivalent

Some College Experience

Associate Degree

Bachelor Degree

Master Degree

Doctorate Degree

I prefer not to answer this question

PURDUE
UNIVERSITY

How do you describe yourself (please keep in mind that all answers are confidential)?

Race

Asian/ Pacific Islander

Black/ African American

Native American/ Alaskan Native

White/ Caucasian

Other


I prefer not to answer this question

Ethnicity

Hispanic

Non-Hispanic

I prefer not to answer this question

0%  100%

<< >>

Survey Powered By [Qualtrics](#)

PURDUE
UNIVERSITY

In what county did you participate in the Master Gardener Program?

Benton

Adams
Allen
Bartholomew
Benton
Blackford
Boone
Brown
Carroll
Cass
Clark
Clay
Clinton
Crawford
Davies
Dearborn
Decatur
De Kalb
Delaware
Dubois

0% 100%

<< >>

Survey Powered By [Qualtrics](#)

PURDUE
UNIVERSITY



Print this page **NOW** and submit it to your Master Gardener coordinator in your county to receive credit for your hour of volunteer service.

Thank you very much for participating!

0%  100%



Survey Powered By *Qualtrics*

Appendix H: IRB Approval Letter for Exempt Status



HUMAN RESEARCH PROTECTION PROGRAM
INSTITUTIONAL REVIEW BOARDS

To: KATHRYN ORVIS
AGAD 227

From: RICHARD MATTES, Chair
Social Science IRB

Date: 04/12/2011

Committee Action: Exemption Granted

IRB Action Date: 04/05/2011

IRB Protocol #: 1103010677

Study Title: Master Gardener Assessment

The above-referenced protocol is considered exempt after review by the Institutional Review Board pursuant to Federal regulations, 45 CFR Part 46.101(b)(2).

If you wish to revise or amend the protocol, please submit a revision request to the IRB for consideration. Please contact our office if you have any questions.

We wish you good luck with your work. Please retain copy of this letter for your records.

Below is a list of best practices that you should be aware of and keep in mind when conducting your research.

Category 1

- Written permission from preschools, primary and/or secondary schools should be obtained prior to the investigator engaging in research, such as recruitment and conducting research procedures. If the written permission was not submitted with the protocol at the time of IRB review (e.g., the school would not issue the letter without proof of IRB approval), the investigator must submit the written permission to the IRB office immediately upon receipt from the school. This is a Human Research Protection Program requirement.

Categories 2 and 3

- Surveys and data collection instruments should note that only participants 18 years of age and over are eligible to participate in the research, state that participation is voluntary and that any questions may be skipped, and include the investigator's name and contact information.
- Investigators should explain to participants the amount of time required to participate. Additionally, they should explain to participants how confidentiality will be maintained or if it will not be maintained.
- When conducting focus group research, investigators cannot guarantee that all participants in the focus group will maintain the confidentiality of other group participants. The investigator should make participants aware of this potential for breach of confidentiality.
- Written permission from businesses, preschools, primary and/or secondary schools should be obtained prior to the investigator engaging in research, such as recruitment and conducting research procedures. If the written

Appendix I: Pilot Test Results

Table A1

Frequency Distribution of Purdue Master Gardener Interns and Master Gardener Data

	n	%
Intern	18	24.0
Master Gardener	56	74.7
Missing Data	1	1.3

Note. N = 75.

Table A2

Purdue Master Gardener Interns' Reasons for Participating in the Program

Reason	n	% ^a
Increase horticultural knowledge	18	24.0
Hobby	12	16.0
Other	4	5.3
Gain volunteer experience	3	4.0
With friend or family member	2	2.7

Note. N = 18. This item contains no missing data.

^aPercentages exceed 100% because multiple answers could be selected.

Table A3

Program Benefits Perceived by Purdue Master Gardener Interns

Statement	Scale							Mean	Standard deviation
	Strongly disagree 1	Disagree 2	Slightly disagree 3	Slightly agree 4	Agree 5	Strongly agree 6	No opinion 7		
e. The Master Gardener Program was worth my time and money	0 (0%)	0 (0%)	1 (1.3%)	1 (1.3%)	5 (6.7%)	11 (14.7%)	0 (0%)	5.44	0.86
f. The Master Gardener Program helped me to become a better environmental steward in regards to gardening and/or yard care	0 (0%)	0 (0%)	0 (0%)	2 (2.7%)	10 (13.3%)	5 (6.7%)	1 (1.3%)	5.28	0.75
g. The Master Gardener Program helped me to become a better gardener	0 (0%)	1 (1.3%)	1 (1.3%)	0 (0%)	8 (10.7%)	8 (10.7%)	0 (0%)	5.17	1.10
h. The Master Gardener Program helped me to save money	0 (0%)	3 (4.0%)	4 (5.3%)	4 (5.3%)	4 (5.3%)	1 (1.3%)	2 (2.7%)	4.11	1.57

Note. N = 18. This item contains no missing data.

Table A4

Use of Environmentally Friendly Gardening Practices by Purdue Master Gardener Interns

Practice	n	% ^a
More responsible plant choices	9	12.0
Mulching/composting	13	17.3
Reduction in pesticide use	13	17.3
Using less water/more efficient watering practices	5	6.7
Grass recycling	8	10.7
Use of rain barrels/rain gardens	6	8.0
Other	1	1.3

Note. N = 18. This item contains no missing data.

^aPercentages exceed 100% because multiple answers could be selected.

Table A5

Specific Gardening Practices Begun or Adapted by Purdue Master Gardener Interns

Practice	Scale							Mean	Standard deviation
	Strongly disagree 1	Disagree 2	Slightly disagree 3	Slightly agree 4	Agree 5	Strongly agree 6	Not applicable 7		
Other	0 (0%)	0 (0%)	0 (0%)	2 (2.7%)	3 (4.0%)	0 (0%)	13 (17.3%)	6.33	1.14
Reduction/more responsible pesticide use	0 (0%)	0 (0%)	1 (1.3%)	0 (0%)	12 (16.0%)	3 (4.0%)	2 (2.7%)	5.28	0.90
Crop rotation	1 (1.3%)	1 (1.3%)	1 (1.3%)	0 (0%)	6 *.0%	4 (5.3%)	5 (6.7%)	5.28	1.74
Saving seeds/sharing plants/plant exchange	1 (1.3%)	0 (0%)	0 (0%)	2 (2.7%)	6 (8.0%)	7 (9.3%)	2 (2.7%)	5.28	1.36
Mulching/composting	1 (1.3%)	0 (0%)	1 (1.3%)	1 (1.3%)	5 (6.7%)	9 (12.0%)	1 (1.3%)	5.22	1.40
Best practices for soil preparation	1 (1.3%)	0 (0%)	1 91.3%	0 (0%)	9 (12.0%)	7 (9.3%)	0 (0%)	5.06	1.26
More effective land use	1 (1.3%)	0 (0%)	2 (2.7%)	3 (4.0%)	4 (5.3%)	4 (5.3%)	4 (5.3%)	5.06	1.66
Plant placement (right plant, right place)	1 (1.3%)	1 (1.3%)	0 (0%)	1 (1.3%)	9 (12.0%)	5 6.7%	1 (1.3%)	4.94	1.43
Plant choice (avoiding invasives/ including natives)	1 (1.3%)	0 (0%)	0 (0%)	3 (4.0%)	11 (14.7%)	2 (2.7%)	1 (1.3%)	4.83	1.20
Water usage/more efficient irrigation/less water intensive plants	0 (0%)	1 (1.3%)	3 (4.0%)	6 (8.0%)	5 (6.7%)	1 (1.3%)	2 (2.7%)	4.44	1.34

Note. N = 18. This item contains no missing data.

Table A6

Financial Savings Perceived by Purdue Master Gardener Interns due to the Purdue Master Gardener Program

Savings	n	%
\$0-\$100	2	2.7
\$101-250	3	4.0
\$251-\$500	1	1.3
\$501 and up	0	0
The program has not helped me save money, but I think it will in the future	6	8.0
The program has not helped me save money	6	8.0

Note. N = 18. This item contains no missing data.

Table A7

Purdue Master Gardener Intern Evaluation of Educational Training Logistics

Logistic	Scale					Mean	Standard Deviation
	Poor	Fair	Average	Good	Excellent		
	1	2	3	4	5		
Handout materials	0 (0%)	0 (0%)	0 (0%)	3 (4.0%)	15 (20.0%)	4.83	0.38
Time of year	0 (0%)	0 (0%)	1 (1.3%)	2 (2.7%)	15 (20.0%)	4.78	0.55
Time of day	0 (0%)	0 (0%)	1 (1.3%)	3 (4.0%)	14 (18.7%)	4.72	0.58
Instructors	0 (0%)	0 (0%)	1 (1.3%)	6 (8.0%)	11 (14.7%)	4.56	0.62
Facilities	0 (0%)	1 (1.3%)	0 (0%)	6 (8.0%)	11 (14.7%)	4.50	0.79

Note. N = 18. This item contains no missing data.

Table A8

Purdue Master Gardener Intern Evaluation of Educational Training Session

Educational Training Session	Scale					Mean	Standard deviation
	Poor	Fair	Average	Good	Excellent		
	1	2	3	4	5		
Plant disease diagnosis/control	0 (0%)	0 (0%)	0 (0%)	5 (6.7%)	13 (17.3%)	4.72	0.46
Orientation	0 (0%)	0 (0%)	1 (1.3%)	5 (6.7%)	12 (16.0%)	4.61	0.61

Educational Training Session	Scale					Mean	Standard deviation
	Poor	Fair	Average	Good	Excellent		
	1	2	3	4	5		
Plant science	0 (0%)	0 (0%)	1 (1.3%)	5 (6.7%)	12 (16.0%)	4.61	0.61
Soil science	0 (0%)	0 (0%)	2 (2.7%)	6 (8.0%)	10 (13.3%)	4.44	0.71
Home lawns	0 (0%)	0 (0%)	1 (1.3%)	8 (10.7%)	9 (12.0%)	4.44	0.62
Insect pest diagnosis/ control	0 (0%)	0 (0%)	1 (1.3%)	8 (10.7%)	9 (12.0%)	4.44	0.62
Plant nutrition	0 (0%)	0 (0%)	3 (4.0%)	5 (6.7%)	10 (13.3%)	4.39	0.78
Pesticide safety/pesticide	0 (0%)	0 (0%)	4 (5.3%)	4 (5.3%)	10 (13.3%)	4.33	0.77
Woody ornamentals	0 (0%)	0 (0%)	3 (4.0%)	6 (8.0%)	9 (12.0%)	4.33	0.84
Herbaceous ornamentals	0 (0%)	0 (0%)	3 (4.0%)	8 (10.7%)	7 (9.3%)	4.22	0.73
Vegetables	0 (0%)	0 (0%)	3 (4.0%)	9 (12.0%)	6 (8.0%)	4.17	0.71
Animal pests	0 (0%)	1 (1.3%)	2 (2.7%)	8 (10.7%)	7 (9.3%)	4.17	0.86
Weed identification/ control	0 (0%)	1 (1.3%)	4 (5.3%)	8 (10.7%)	5 (6.7%)	3.94	0.87

Note. N = 18. This item contains no missing data.

Table A9

Frequency Distribution of Years as a Master Gardener of Purdue Master Gardeners

Years as Master Gardener	n	%
Less than 1 year	17	29.3
1-5 years	23	39.7
6-10 years	6	10.3
11-15 years	6	10.3
16-20 years	4	6.9
21-25 years	2	3.4
25 or more years	0	0

Note. N = 58. Interns did not answer this item.

Table A10

Frequency Distribution of Status in the Program of Purdue Master Gardeners

Status	n	%
Intern	18	24.0
Master Gardener	12	16.0
Advanced	14	18.7
Bronze	9	12.0
Silver	9	12.0
Gold	10	13.3
Missing Data	3	4.0

Note. N = 75.

Table A11

Frequency Distribution of Attitudes of Purdue Master Gardeners about Citizen and Individual Responsibility to Volunteer, Giving, and View of Community

Statement	Scale							Mean	Standard deviation	Missing data
	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree	No opinion			
	1	2	3	4	5	6	7			
j. Involvement in programs to improve my community is important- Individual responsibility	1 (1.3%)	0 (0%)	0 (0%)	5 (6.7%)	32 (42.7%)	31 (41.3%)	1 (1.3%)	5.34	0.83	5 (6.7%)
k. I believe it is important for me to participate in community service- Individual responsibility	1 (1.3%)	0 (0%)	0 (0%)	7 (9.3%)	31 (41.3%)	30 (40.0%)	1 (1.3%)	5.30	0.86	5 (6.7%)
l. I believe I have a responsibility to give back to my community- Individual responsibility	2 (2.7%)	2 (2.7%)	0 (0%)	4 (5.3%)	29 (38.7%)	32 (42.7%)	1 (1.3%)	5.23	1.12	5 (6.7%)
m. I believe it is a citizen's responsibility to participate in community service- Citizen responsibility	2 (2.7%)	2 (2.7%)	1 (1.3%)	5 (6.7%)	28 (37.3%)	30 (40.0%)	3 (4.0%)	5.21	1.18	4 (5.3%)
n. People should find time to contribute to their communities- Citizen responsibility	1 (1.3%)	0 (0%)	2 (2.7%)	9 (12.0%)	31 (41.3%)	27 (36.0%)	1 (1.3%)	5.17	0.94	4 (5.3%)

Statement	Scale							Mean	Standard deviation	Missing data
	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree	No opinion			
	1	2	3	4	5	6	7			
o. I have a positive view of my community- View of community	1 (1.3%)	2 (2.7%)	2 (2.7%)	5 (6.7%)	29 (38.7%)	30 (40.0%)	0 (0%)	5.16	1.05	6 (8.0%)
p. I believe it is important for me to give back to my community by giving of my knowledge- Giving	2 (2.7%)	1 (1.3%)	0 (0%)	10 (13.3%)	31 (41.3%)	23 (30.7%)	2 (2.7%)	5.09	1.10	6 (8.0%)
q. I should volunteer my time to support my community- Giving	2 (2.7%)	1 (1.3%)	2 (2.7%)	6 (8.0%)	32 (42.7%)	25 (33.3%)	1 (1.3%)	5.09	1.11	6 (8.0%)
r. I believe it is important for me to give back to my community by giving of my resources- Giving	2 (2.7%)	0 (0%)	1 (1.3%)	8 (10.7%)	38 (50.7%)	19 (25.3%)	1 (1.3%)	5.01	0.99	6 (8.0%)
s. I trust in the strength of my community- View of community	1 (1.3%)	1 (1.3%)	4 (5.3%)	7 (9.3%)	34 (45.3%)	21 (28.0%)	1 (1.3%)	5.01	1.04	6 (8.0%)
t. My belief that I should participate in community service has been strengthened as a result of participating in the Master Gardener Program- Individual responsibility	3 (4.0%)	6 (8.0%)	2 (2.7%)	6 (8.0%)	32 (42.7%)	18 (24.0%)	3 (4.0%)	4.77	1.44	5 (6.7%)

Statement	Scale							Mean	Standard deviation	Missing data
	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree	No opinion			
	1	2	3	4	5	6	7			
u. My belief that I should give to my community has been strengthened as a result of participating in the Master Gardener Program- Giving	4 (5.3%)	6 (8.0%)	3 (4.0%)	7 (9.3%)	30 (40.0%)	16 (21.3%)	3 (4.0%)	4.64	1.51	6 (8.0%)
v. My belief that a citizen should volunteer has been strengthened as a result of participating in the Master Gardener Program- Citizen responsibility	1 (1.3%)	6 (8.0%)	7 (9.3%)	11 (14.7%)	29 (38.7%)	13 (17.3%)	4 (5.3%)	4.63	1.36	4 (5.3%)
w. My view of my community has been strengthened as a result of participating in the Master Gardener Program- View of community	2 (2.7%)	6 (8.0%)	7 (9.3%)	14 (18.7%)	19 (25.3%)	19 (25.3%)	2 (2.7%)	4.55	1.44	6 (8.0%)
x. I believe that all members of a community should volunteer- Citizen responsibility	4 (5.3%)	7 (9.3%)	4 (5.3%)	17 (22.7%)	21 (28.0%)	14 (18.7%)	4 (5.3%)	4.44	1.55	4 (5.3%)

Note. N = 75.

Table A12

Frequency Distribution of Self-Efficacy to Make a Positive Impact and Capacity to Volunteer (Time and Skills) of Purdue Master Gardeners

Statement	Scale							Mean	Standard deviation	Missing data
	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree	No opinion			
	1	2	3	4	5	6	7			
k. I feel I am able to gain the skills necessary to volunteer- Skills	0 (0%)	0 (0%)	0 (0%)	4 (5.3%)	37 (49.3%)	24 (32.0%)	2 (2.7%)	5.36	0.64	8 (10.7%)
l. I have confidence in my ability to help others- Positive impact	0 (0%)	0 (0%)	0 (0%)	4 (5.3%)	36 (48.0%)	26 (34.7%)	1 (1.3%)	5.36	0.62	8 (10.7%)
m. I believe I have what it takes to volunteer- Skills	0 (0%)	0 (0%)	0 (0%)	4 (5.3%)	38 (50.7%)	24 (32.0%)	1 (1.3%)	5.33	0.61	8 (10.7%)
n. I believe I have the skills necessary to volunteer- Skills	0 (0%)	0 (0%)	0 (0%)	6 (8.0%)	36 (48.0%)	24 (32.0%)	1 (1.3%)	5.30	0.65	8 (10.7%)
o. Each of us can make a difference in the lives of the less fortunate- Positive impact	0 (0%)	0 (0%)	0 (0%)	6 (8.0%)	36 (48.0%)	24 (32.0%)	1 (1.3%)	5.30	0.65	8 (10.7%)
p. I can make a difference in my community- Positive impact	0 (0%)	0 (0%)	0 (0%)	7 (9.3%)	41 (54.7%)	18 (24.0%)	1 (1.3%)	5.19	0.63	8 (10.7%)
q. I can have a positive impact on social problems- Positive impact	0 (0%)	0 (0%)	3 (4.0%)	17 (22.7%)	30 (40.0%)	12 (16.0%)	5 (6.7%)	4.99	0.96	8 (10.7%)

		Scale								
Statement	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree	No opinion	Mean	Standard deviation	Missing data
	1	2	3	4	5	6	7			
r. I believe I can make time to volunteer- Time	0 (0%)	1 (1.3%)	4 (5.3%)	14 (18.7%)	34 (45.3%)	13 (17.3%)	1 (1.3%)	4.85	0.91	8 (10.7%)
s. My belief that I have the skills necessary to volunteer has been strengthened as a result of participating in the Master Gardener Program- Skills	2 (2.7%)	3 (4.0%)	2 (2.7%)	12 (16.0%)	31 (41.3%)	13 (17.3%)	4 (5.3%)	4.82	1.27	8 (10.7%)
t. My belief that I can make a positive impact in my community has been strengthened as a result of participating in the Master Gardener Program- Positive impact	1 (1.3%)	5 (6.7%)	3 (4.0%)	11 (14.7%)	31 (41.3%)	14 (18.7%)	2 (2.7%)	4.73	1.24	8 (10.7%)
u. I feel I have the time to volunteer- Time	2 (2.7%)	3 (4.0%)	7 (9.3%)	15 (20.0%)	29 (38.7%)	10 (13.3%)	1 (1.3%)	4.49	1.22	8 (10.7%)
v. My belief that I can make time to volunteer has been strengthened as a result of participating in the Master Gardener Program- Time	2 (2.7%)	10 (13.3%)	3 (4.0%)	15 (20.0%)	24 (32.0%)	9 (12.0%)	4 (5.3%)	4.37	1.50	8 (10.7%)

Note. N = 75.

Table A13

Frequency Distribution of Self-Reported Volunteering Activities of Purdue Master Gardeners before Participation in the Purdue Master Gardener Program

Volunteer activity	n	% ^a
Church or faith-based	41	54.7
Civic, political, or professional	35	46.7
Educational or youth serving	30	40.0
Social or community service	30	40.0
Sport, hobby, cultural, or arts	20	26.7
Hospital or healthcare	16	21.3
Environmental	12	16.0
Animal care	10	13.3
4-H youth development	10	13.3
Other	7	9.3
Public safety organization	3	4.0
I did not volunteer before participating in the Master Gardener Program	3	4.0

Note. N = 75. This item contains no missing data.

^aPercentages exceed 100% because multiple answers could be selected.

Table A14

Frequency Distribution of Volunteering Hours Prior to Program Participation of Purdue Master Gardeners

Hours per month	n	%
1-10	41	54.7
11-20	18	24.0
21-30	2	2.7
31-40	1	1.3
41-50	0	0
50 or more	1	1.3
I did not volunteer before participating in the Master Gardener Program	4	5.3
Missing Data	8	10.7

Note. N = 75.

Table A15

Frequency Distribution of Reasons Reported by Purdue Master Gardeners for not Volunteering Prior to Program Participation

Reason	n	% ^a
Lack of time	8	10.7
No one asked me to	4	5.3
Perceived lack of skills	2	2.7
Did not want to	2	2.7
Other	3	4.0
Not applicable	54	72.0

Note. N = 75.

^aPercentages exceed 100% because multiple answers could be selected.

Table A16

Participation of a Purdue Master Gardener in a Service-Learning Opportunity Prior to Program Participation

Response	n	%
Yes	33	44.0
No	25	33.3
Not sure	9	12.0
Missing data	8	10.7

Note. N = 75.

Table A17

Total Volunteering Hours (Including Master Gardener and non-Master Gardener Hours) of Purdue Master Gardeners

Hours per month	n	%
1-5	10	13.3
6-14	7	9.3
15-23	4	5.3
24-32	2	2.7
33-41	1	1.3
42-50	0	0
51 or more	0	0
Missing data	51	68.1

Note. N = 75.

Table A18

Frequency Distribution of Number of Organizations for which a Purdue Master Gardeners Volunteers

Number of organizations	n	%
1-2	34	45.3
3-4	17	22.7
5-6	4	5.3
More than 6	3	4.0
Missing data	17	22.7

Note. N = 75.

Table A19

Frequency Distribution of Volunteer Organizations for which a Purdue Master Gardener Volunteers

Volunteer activity	n	% ^a
Master Gardener activities	51	68.0
Church or faith-based	25	33.3
Social or community service	19	25.3
Civic, political, or professional	16	21.3
Educational or youth serving	15	20.0
Sport, hobby, cultural, or arts	12	16.0
Environmental	9	12.0
Hospital or healthcare	6	8.0
Animal care	6	8.0
Other	3	4.0
4-H youth development	2	2.7
Public safety organization	2	2.7
I do not volunteer other than Master Gardener activities	8	10.7
Missing data	21	28.0

Note. N = 75.

^aPercentages exceed 100% because multiple answers could be selected.

Table A20

Frequency Distribution of Self-reported Change in Volunteering Behavior through Participation in the Purdue Master Gardener Program

Response	n	%
Yes	36	48.0
No	22	29.3
Missing data	17	22.7

Note. N = 75.

Table A21

Frequency Distribution of Self-reported Volunteer Activities of Purdue Master Gardeners

Volunteer activity	n	% ^a
Teaching someone a skill (not family member or friend)	34	45.3
Visiting someone in the hospital or hospice (not family member or friend)	19	25.3
Conservation or restoration of natural areas	19	25.3
Neighborhood or river cleanup	14	18.7
Construction of a building or apparatus for use by the less fortunate	7	9.3
Mentoring (such as Big Brothers, Big Sisters)	4	5.3
Meals on Wheels or other food service to the less fortunate	3	4.0
Missing data	17	22.7

Note. N = 75.

^aPercentages exceed 100% because multiple answers could be selected.

Table A22

Frequency Distribution of Master Gardener Volunteer Activities of Purdue Master Gardeners

Master Gardener activity	n	% ^a
Community service (e. g. non-educational, such as beautification projects)	38	50.7
Info booth (e.g. fair)	28	37.3
Teaching others	22	29.3
Program administration (e. g. board member, committee work, reporting)	18	24.0
Demonstration garden	24	32.0
Working with/teaching youth	11	14.7
Communications (e. g. newsletter)	6	8.0
Hotline	0	0
Other	15	20.0

Note. N = 75. This item contains no missing data.

^aPercentages exceed 100% because multiple answers could be selected.

Table A23

Frequency Distribution of Master Gardener Volunteer Hours per Month of Purdue Master Gardeners

Volunteer hours per month	n	%
0-10	47	62.3
11-20	8	10.7
21-30	3	4.0
31-40	0	0
41-50	0	0
50 or more	0	0
Missing Data	17	22.7

Note. N = 75.

Table A24

Participation of Purdue Master Gardeners in Volunteering as a Child or Young Adult

Response	n	%
No	30	40.0
Yes	27	36.0
Missing data	18	24.0

Note. N = 75.

Table A25

Frequency Distribution of Reported Adults who Emphasized Volunteering in a Purdue Master Gardener's Life

Response	n	%
No	30	40.0
Yes	27	36.0
Missing data	18	24.0

Note. N = 75.

Table A26

Participation of Purdue Master Gardeners in Volunteering as a Requirement from Employer

Response	n	%
No	53	70.7
Yes	3	4.0
Missing data	19	25.3

Note. N = 75.

Table A27

Frequency Distribution of Gender Demographic Data of Purdue Master Gardeners

Gender	n	%
Female	6	8.0
Male	51	68.0
Missing data	18	24.0

Note. N = 75.

Table A28

Frequency Distribution of Age Demographic Data of Purdue Master Gardeners

Age	n	%
18-24	0	0
25-34	0	0
35-44	4	5.3
45-54	12	16.0
55-64	21	28.0
65-74	18	24.0
75-84	3	4.0
85 and over	0	0
Missing data	17	22.7

Note. N = 75.

Table A29

Frequency Distribution of Highest Level of Education Achieved Demographic Data of Purdue Master Gardeners

Education	n	%
Some high school	0	0
High school diploma or GED equivalent	1	1.3
Some college experience	6	8.0
Associate degree	9	12.0
Bachelor degree	20	26.7
Master degree	13	17.3
Doctorate degree	9	12.0
Missing data	17	22.7

Note. N = 75.

Table A30

Frequency Distribution of Occupation Demographic Data of Purdue Master Gardeners

Occupation	n	%
Retired	25	30.7
Other	8	10.7
Healthcare practitioners and technical	6	8.0
Education, training, and library	6	8.0

Occupation	n	%
Management	3	4.0
Office and administrative support	3	4.0
Business and financial operations	2	2.7
Stay-at-home parent	1	1.3
Sales and related	1	1.3
Arts, design, entertainment, sports, and media	1	1.3
Healthcare support	1	1.3
Legal	1	1.3
Food preparation and serving related	1	1.3
Production	1	1.3
Computers and mathematics	0	0
Community and social service	0	0
Life, physical, and social science	0	0
Farming, fishing, and forestry	0	0
Architecture and engineering	0	0
Personal care and service	0	0
Transportation and materials moving	0	0

Occupation	n	%
Construction and extraction	0	0
Installation, maintenance, and repair	0	0
Military	0	0
Protective service	0	0
Building and grounds cleaning and maintenance	0	0
Missing data	17	22.7

Note. N = 75.

Table A31

Frequency Distribution of Gross Estimated Household Income Demographic Data of Purdue Master Gardeners

Income	n	%
\$0-\$20,000	1	1.3
\$20,001-\$40,000	7	9.3
\$40,001-\$60,000	18	24
\$60,001-\$80,000	6	8.0
\$80,001-\$100,000	3	4.0
\$100,001-\$120,000	8	10.7
\$120,001-\$140,000	1	1.3
\$140,001-\$160,000	1	1.3
\$160,001 or more	5	6.7
Missing data	25	33.3

Note. N = 75.

Table A32

Frequency Distribution of Marital Status Demographic Data of Purdue Master Gardeners

Marital Status	n	%
Married, spouse present	42	56
Married, spouse absent, separated	3	4.0
Married, spouse absent, other	4	5.3
Widowed	8	10.7
Divorced	0	0
Never married	0	0
Single	0	0
Missing data	18	24.0

Note. N = 75.

Table A33

Frequency Distribution of Number of People in Household Demographic Data of Purdue Master Gardeners

# of people in household	n	%
1	8	10.7
2	41	54.7
3	6	8.0
4-6	0	0
7 or more	3	4.0
Missing data	17	22.7

Note. N = 75.

Table A34

Frequency Distribution of Race Demographic Data of Purdue Master Gardeners

Race	n	%
White/Caucasian	56	74.7
Asian/Pacific Islander	0	0
Black/African American	0	0
Native American/Alaskan Native	0	0
Other	1	1.3
Missing data	18	24.0

Note. N = 75.

Table A35

Frequency Distribution of Ethnicity Demographic Data of Purdue Master Gardeners

Ethnicity	n	%
Non-Hispanic	53	70.7
Hispanic	1	1.3
Missing data	21	28.0

Note. N = 75.