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Trends in Cooperative Extension Calls from 2010 - 2019

Emily Elizabeth Smith
Utah State University

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TRENDS IN COOPERATIVE EXTENSION CALLS FROM 2010 - 2019

by

Emily Elizabeth Smith

A thesis submitted in partial fulfillment

of the requirements for the degree

of

MASTER OF SCIENCE

in

Human Development and Family Studies

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2021
ABSTRACT

TRENDS IN COOPERATIVE EXTENSION CALLS FROM 2010 - 2019

by

Emily Smith, Master of Science
Utah State University, 2021

Major Professor: Dr. Sarah Tulane
Department: Human Development and Family Studies

The purposes of this study are to assess the most frequently addressed topics that the public has for Family Consumer Sciences (FCS) related Extension professionals and to indicate whether the topics are changing over time, with a specific interest in changes to food safety and preservation inquiries. The CES office in one county in a western state has been collecting FCS data from the years 2010-2019. This data includes information regarding the phone calls received to the office specific to FCS topics. The data was coded and put into an Excel spreadsheet. There were a total of 5,863 phone calls with 695 male callers, 5,151 female callers, and 17 preferred to not answer. These phone calls came from 210 different zip codes, representing 24 states and territories of the United States and several international calls. There were 38 topics recorded on the spreadsheet, which were then condensed into five categories. The five categories are as follows: food preservation, food safety, nutrition, food safety, and marriage and finances. Descriptive
statistics were used to get an overview of the trends in the data. Following that, one-way independent groups ANOVA was used to examine the changes in frequencies of food safety and food preservation calls over the ten-year span. There was a downward trend in all phone call topics. The frequency of both food safety and food preservation calls decreased over time.
PUBLIC ABSTRACT

Trends in Cooperative Extension Calls from 2010 - 2019

Emily Smith

The purposes of this study are to assess the most frequently addressed topics that the public has for Family Consumer Sciences (FCS) related Extension professionals and to indicate whether the topics are changing over time, with a specific interest in changes to food safety and preservation inquiries. The CES office in one county in a western state has been collecting FCS data from the years 2010 to 2019. This data is about the FCS-specific phone calls received to the office. The data was then coded and put into an Excel spreadsheet. There were a total of 5,863 phone calls with 695 male callers, 5,151 female callers, and 17 preferred to not answer. These phone calls came from 210 different zip codes, representing 24 states and territories of the United States and several international calls. There were 38 topics recorded on the spreadsheet, which were then condensed into five categories. The five categories are as follows: food preservation, food safety, nutrition, food safety, and marriage and finances. Descriptive statistics were used to get an overview of the trends in the data. Following that, one-way independent groups ANOVA will determine the changes in frequencies of food safety and food preservation calls over the ten-year span. It is hypothesized that the frequency of both food safety and food preservation calls will decrease over time. Findings report that there is a downward trend in all phone call topics. There is a significant decrease in calls from 2010-2019 in the food safety and food preservation categories.
Acknowledgements

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Emily E. Smith
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Chapter I

Introduction

Over 100 years ago the Smith-Lever Act of 1914 created a national Cooperative Extension Service (CES). The purpose of the CES was to extend education to Americans living in rural communities, and teach them about new technology and practices in agriculture (The Smith-Lever Act of 1914, 2014). Faculty members of the Land-Grant University (Utah State University in the case of Utah) become educated on science-based research, and then make it available, in an easier to understand way, for their target audience (National Institution of Food and Agriculture, n.d.).

Cooperative Extension Service continues to educate Americans today and has expanded its services not only to agriculturalists but to youth, parents, families, and communities. The education topics have also broadened since CES was put in place. There are a variety of topics that are taught nationwide.

Educational topics that are a focus in the Western State that the data was collected in now include Family Consumer Sciences (FCS) topics such as food preservation (Date et al., 2011; Garden-Robinson et al., 2019; Taylor et al., 2014), food safety (Burdett & Garden-Robinson, 2015; Smith et al., 2018), family finance (Russell & Kim, 2016), parenting (Fay & Fay, 2012), and relationship skills (Bradford et al., 2016; Collins & Fetsch, 2009; Crapo et al., 2019; Goddard & Olsen, 2004; Larson, 2004; Payne et al., 2019). Also included in CES are horticulture areas such as gardening, insects and pests, plant disease, beekeeping, etc. Another main long-time focus of Extension Services is Agriculture. Agriculture education was one of the original purposes of creating the Land-
Grant University and its accompanying Cooperative Extension Services. Health and nutrition specialists are another addition that has been made to the CES faculty throughout the years. They educate about nutrition, exercise, general health as well as opioid use and prevention (Brill et al., 2014; Carlson & Garden-Robinson, 2017; Ford et al., 2015; Henneman et al., 2017). Another education area includes 4-H which is a program that educates youth ages 8-18 a broad range of skills from robotics to sewing, to farming (Palmer & Cromwell, 2019).

The mode of education is also broad and changing to match the community’s needs. Most often the education provided by CES is informal education or in partnership with community. However certain education is also provided in elementary, middle, or high schools. Recently, match the demands of technology many CES educators are creating online content to be able to educate individuals from anywhere participants have online access.

As the role of CES changes nationwide, creating programming that meets the needs of the communities they serve is becoming more complex (Berven et al., 2020). Because the needs of the communities are more diverse it also increases the diversity of job requirements for the Extension faculty. They now are not only involved in being an expert in their chosen field, but in many other fields, as well as developing and evaluating programming, and performing office duties (Palmer & Cromwell, 2019). Palmer and Cromwell (2019) suggest six essential elements to creating successful Extension programming including (1) discovering the needs of the community you are serving, (2) developing the program that will fill the needs, (3) finding the best venue to advertise the programming, (4) delivering the program in an organized manner, (5) evaluating the
program to assess its effectiveness in filling the needs of the community, and (6) having scholarly outputs to share the results of the programming. The hope behind providing these essential elements is that Extension faculty will have a framework to guide them through creating programming especially for a topic that they are not particularly expert in. These six practices are easily integrated into a variety of topics which can be helpful for the diversity of topics that Extension faculty are expected to teach. A main way that Extension Professionals can get information into the hands of those they serve are through networking, technology, and social media.

Mentoring

A main way that new professionals are supported is through mentoring. During mentoring an established senior in the organization with expertise and understanding works with the new professional to help support and build their skills, connections, and ultimately their career (Place & Bailey, 2010). Mentoring is beneficial not only to the new professionals, but also the mentor, and the land-grant university Extension program (Byington, 2010; Christensen et al., 2014; Place & Bailey, 2010). Extension professionals’ skill development is a hands-on process that needs to be a center focus for new and more experienced professionals (Berven et al., 2020). Other common practices of training for Extension professionals are regular in-service training (Berven et al., 2020). In-service training can help expand Extension professional’s knowledge and skills. The skills that could be taught may include interpersonal skills, professionalism, teaching techniques (Berven et al., 2020), and technology skills.
Technology Skills

Although there are members of the population that look forward to reading the newspaper article from the Extension faculty, or hearing about their classes on the radio, advanced technology skills are becoming increasingly crucial to Extension educators. Instructional videos are created and shared all throughout social media sites, there are courses that can be completed online, and classes are promoted virtually to stay relevant to today’s online society. Today there is only one in 10 American adults who do not use the internet (Pew Research Center, 2020). In 2008 nearly 78% of American adults used the internet whereas in 2019 we see an increase to 90% of American adults using the internet. There is an undeniable increase in internet usage in America. (Pew Research Center, 2020). This increase in internet usage could lead to a decrease in traditional information seeking such as phone calls and in-person office visits to Extension services.

With such an increased access to the internet there are a variety of ways to reach out to the public virtually including newsletters (Henneman et al., 2016), social media websites (Franzen-Castle et al., 2015; Franzen-Castle & Henneman, 2014), videos (Mills & Hawkins, 2015), and more. Although newsletters may be considered an outdated form of communication, they do create regular communication with customers. Emails are a more direct and therefore a more effective way to reach consumers (Henneman et al., 2016).
Social Media

Social media websites are effective to share and promote online education. Pinterest, Facebook, Twitter, and YouTube are a few social media sites utilized the most (Franzen-Castle et al., 2015; Franzen-Castle & Henneman, 2014; Mills & Hawkins, 2015). Pinterest is a common place for sharing food and drink recipes and ideas, thus making it a good starting place for Extension professionals to share recipes as well as nutrition and food safety information (Franzen-Castle et al., 2015). Facebook and Twitter were chosen platforms to share Extension information because of their popularity, hoping that because of the number of people on these social media sites the information would get higher exposure (Franzen-Castle et al., 2015). A series of videos with Extension related topics were created and shared on YouTube and it was found that this approach was optimal for short information sessions, and reached more people than ever reached through face-to-face classes in the rural area the study was conducted in (Mills & Hawkins, 2015). It is recommended to receive optimal social media presence that you post five times on Pinterest, three times to Twitter, and twice to Facebook per day (Franzen-Castle et al., 2015). With the time it takes to create, find, and share this content there would not be enough time for all of the other responsibilities of a new Extension faculty member. The demands and skills are broad and complicated in an ever-changing world.

Not only are Extension faculty expected to be experts in a variety of fields, but also to have outstanding personal skills, teaching capabilities, time management, and networking skills to help them make connections, and work with the community to provide the needed education (Berven et al., 2020; Harder & Narine, 2020). Many
researchers suggest that competency training would be an effective way to help Extension professionals, particularly ones new to the field, succeed and fill their role as educator (Berven et al., 2020; Harder & Narine, 2020).

**Purpose of the Study**

With such a long history of CES in America there is no surprise that its mission and accessibility has changed over time. However, keeping up with the trends and needs of the community is a crucial part in preserving the legacy of Cooperative Extension Service. With the understanding of the vast knowledge that Extension Professionals need to have, this study aims to help determine what questions and concerns the public has and how Extension Professionals can be better prepared to answer the demands. This quantitative, exploratory study is being conducted to assess the needs of the community by studying the frequency of Family Consumer Sciences (FCS) topics asked about and the trends in calls from 2010-2019 in one Extension office.
Chapter II

Literature Review

With the expansion of services offered by CES over the past 100 years, it is crucial to ask what will meet the needs of the population we serve? As the public’s needs change, meeting those needs in a way that is accessible is becoming increasingly difficult. Family Consumer Science (FCS) related Extension education covers a broad range of topics including food safety (Burdett & Garden-Robinson, 2015; Smith et al., 2018), food preservation (Date et al., 2011; Garden-Robinson et al., 2019; Taylor et al., 2014), nutrition (Brill et al., 2014; Carlson & Garden-Robinson, 2017; Ford et al., 2015; Henneman et al., 2017), finance (Russell & Kim, 2016), healthy relationships (Bradford et al., 2016; Collins & Fetsch, 2009; Crapo et al., 2019; Goddard & Olsen, 2004; Larson, 2004; Payne et al., 2019), parenting (Wilson et al., 2020; Fay & Fay, 2012), etc. There will be few Extension professionals who are experts in each of these topics.

Topics of Extension

The main topics of FCS Extension education that have been chosen as a focus for this thesis are food safety, food preservation, nutrition, and marriage and finances. These topics were selected by communication with the primary FCS faculty in the Extension office from which the data were gathered. The data was gathered from incoming phone calls to one Extension office. These topics include solely FCS based questions and do not include all calls that came to the Extension office. Calls regarding 4H, agriculture, and other topics common to Extension are not received through this particular phone line. The
data set includes a cleaning topic which encompasses areas such as laundry and textiles, home cleaning and home maintenance. This topic is not covered in the review of literature below because there is no literature available on Extension response to and involvement with the topic.

**Food Safety**

Food safety was identified by an Extension professional as one of the topics that are most frequently inquired about by the public in the Western State. It is essential that Extension professionals have knowledge of food safety practices to create programming and answer questions to reach the public that they serve (Smith et al., 2018). The Center for Disease Control and Prevention (CDC) estimates that there are 48 million cases of foodborne illness in America each year that equates to one in every six Americans annually with 3,000 of these cases resulting in death (Center for Disease Control and Prevention, 2018). It has been found that individuals do not actively practice food safety techniques at home (Smith et al., 2018).

Smith and colleagues (2018) also found that the internet is the number one source of information about food safety practices, while the local Extension office was the second to last preferred. While the study by Smith and colleagues (2018) was done in Washington state, it does display an alarming truth that it is a crucial part of Extension's role to educate directly with classes and workshops but also to use internet resources, including social media, to educate on these important topics. Franzen-Castle and Henneman (2014) chose to use Pinterest to share food safety tips to become more accessible to the public in an area where people go to look for recipes and food tips, and
found this approach to be an effective starting place. Although CES is not the number one place that American’s go to look for information about food safety it has been found that their workshops and classes are successful at teaching food safety (Burdett & Garden-Robinson, 2015). For example, Burdett and Garden-Robinson (2015) found that CES classes focused toward youth were associated with reported increases in nutrition knowledge as well as food safety skills for the participants.

**Food Preservation**

As has already been established CES faculty are expected to teach a broad range of topics including family relationships, home canning, emergency preparedness, and finances (Nash et al., 2020; Payne et al., 2019; Swinton, 2020; Taylor et al., 2014). Home food preservation is one topic that the CES has taught since its inception over 100 years ago (Garden-Robinson et al., 2019).

Home food preservation classes taught by Extension are successful at increasing the public’s safe food preservation practices (Taylor et al., 2014). If home food preservation, such as canning, freeze drying, and dehydrating, are not done safely and correctly the outcomes can cause serious injury and can even be fatal (Date et al., 2011). This is why Extension has set out to provide knowledge on how to preserve food safely. However, many people who report home food preservation also report relying on their family and friends for canning questions. Nearly 30% of home canners report adapting recipe directions, and rarely are the USDA or the CES listed as sources of information on home food preservation (Taylor et al., 2014).
A variety of educational strategies are employed by Extension services to educate the public on safe food preservation methods, including online classes, videos, in-person classes and workshops, and well as a mix of online and in-person classes (Garden-Robinson et al., 2019). Despite the diversity of accessibility to food preservation information, less than five percent of people in a study conducted by Taylor and colleagues (2014) got their canning information from a formal source such as the USDA or Extension Services.

**Nutrition**

Nutrition is a topic that Extension has taught to youth (Brill et al., 2014; Carlson & Garden-Robinson, 2017), adults (Henneman et al., 2017), as well as seniors (Ford et al., 2015). The rates of childhood obesity are a concern for most Americans thus Extension has been a part of implementing interventions in schools, to help increase healthy behaviors (Carlson & Garden-Robinson, 2017). Some of the healthy behaviors that have been encouraged in schools through extension are teaching nutrition, changing foods offered during lunch, farm-to-school or school-garden programs, as well as increasing physical activity (Carlson & Garden-Robinson, 2017). Extension professionals may be well-prepared direct educators in schools, but may also serve the schools by helping to write grants for the needed changes, as well as program evaluations skills that can help interpret the impact of the changes made (Brill et al., 2014).

To provide an understanding of an area that is often passed-by in CES education, Henneman and colleagues (2017) found that 63.7% of respondents identified the food nutrition label as the main source of information, while the majority also claimed to not
understand how to read the label. A large part of education is teaching the student how to make sound choices on their own, when they are no longer in the class, or have a professional to tell them what is healthy and what is not. Helping consumers understand the food label, and the other claims made on the packaging, is a crucial part in them understanding what their food labels are really telling them.

**Marriage and Finances**

CES has been a vital and persistent piece of family life education nationwide for decades (Goddard & Olsen, 2004). If couples do not have programs and resources available to them to help strengthen their marriages they are at risk for losing motivation to work and play with their families (Collins & Fetsch, 2009). It has been found that adults who are in healthy relationships are found to be happier, healthier, and overall more satisfied with their lives (Crapo et al., 2019). Extension professionals have developed many resources for couples and marriage education. These resources include in-person classes, online classes, daily tips, and hot topic articles (Goddard & Olsen, 2004; see healthyrelationshipsutah.org). Relationship and Marriage Education (RME) are educational programs that focus on the prevention of couple relationship problems (Larson, 2004). RME classes are a preventative method to help couples, but because of their accessibility, it is found that couples are more likely to attend RME classes than to attend couple therapy (Crapo et al., 2019). Cooperative Extension Services are a main way that marriage education classes are disseminated to the public, whether through single-session, multi-session, or online events (Payne et al., 2019).
Marriage and finances are often topics that go hand in hand. Education on personal financial management offers a way for consumers to learn to manage their money and increase their knowledge in financial matters (Russell & Kim, 2016). One area of financial education that is broadly researched in Extension is emergency preparedness. Extension professionals in every capacity have the opportunity to educate on the topic of emergency preparedness. They educate families on how to be financially and physically prepared, teaching agriculturalists to be prepared on evacuating their livestock, teaching 4-H youth emergency preparedness skills, or teaching individuals how to stay mentally healthy during a crisis. Being prepared for an emergency is something that can easily be incorporated into each Extension faculty’s educational programming (Smith et al., 2012). Nash and colleagues (2020) go as far as to say that it is a fundamental charge of CES to be a beacon of information in time or emergency. This is when the role of networking and maintaining community partnerships becomes crucial. Because the knowledge base for Extension faculty is expected to be so vast, it is helpful to maintain positive partnerships in the community to have someone to reach out to who may be more knowledgeable about certain subjects. These partnerships can prove mutually beneficial, especially in times of emergency (Smith et al., 2012).

Occasionally, such as with the recent Covid-19 pandemic, there is much that is unknown particularly in the beginning stages of emergency. How is it that Extension can provide research-based information when there is no research? It is times like these where CES Professionals have to give their best guess. When any kind of guess is given it is vital that all parties know that the information is that, a guess. It all has to be clear that what is being recommended is based off of what is known right now, and that may
change in the future (Smith et al., 2012).

Summary

Positions in Cooperative Extension Services throughout the nation require a college education, some as high as a doctorate and others only a bachelor’s degree. There are countless ways to start a career as Extension faculty but, depending on the state, there is little training once a new faculty member has been hired (Scheer et al., 2006). The list of expectations for new and existing Extension professionals seems to be never-ending, with the list including: keeping up with research in their own fields, their own programming, evaluations of programming, maintaining contacts and partnerships, teaching practices, creating new partnerships, etc. Furthermore, Extension faculty members are now required to have proficiency in online education and information distribution based on increases with their communities being online. With such a variety of education levels, diversity among earned degrees (topics), and previous experience with CES there is much opportunity to have holes in the new faculty’s skill-set and knowledge base. Thus, it is imperative that we provide every opportunity for these professionals to succeed in their field (Scheer et al., 2006). This study is striving to answer the questions about what are the most frequently addressed topics that the public has for Extension professionals and if the topics are changing over time. The Extension faculty member that works in the office the data was collected from has noticed a higher call frequency in the topics of food safety and food preservation, thus the focus on these topics.
Research Questions

1. What topics are most prevalent in call requests by year?

2. Has the frequency of food safety calls changed over time?
   
   It is hypothesized that the frequency of food safety calls will decrease over time.

3. Has the frequency of food preservation calls changed over time?
   
   It is hypothesized that the frequency of food preservation calls will decrease over time.
Chapter III

Methods

The purpose of this study is to assess the most frequently addressed topics that the public has for FCS Extension faculty, if the topics are changing over time, and will include information about changes specific to food safety and preservation questions. This will be a descriptive, quantitative study using data that was collected and coded by an Extension office between 2010-2019.

Data Set

In an Extension office in a county in a western state they have been collecting Family Consumer Sciences (FCS) data from 2010-2019. This county is a more populated and suburban area than most others in its state. This data is about the phone calls received to the office. When the public would call the Extension office with a FCS related question the FCS employee that answers the FCS-related phone calls would note the date and time of the call, the gender of the caller, and a topic of what they were calling about, and also collect the zip code they resided in. The data was then coded and put into an Excel spreadsheet.

The topics that are included in the data set with their corresponding codes are:
preparation recipes, 5310: weight control, 7300 food preparation recipes, 7310: weight control, 7320: nutrition for special needs, 7330: eating disorders, 7340: nutrition-general, 7350: health, 6340: water quality, 6910: individual/family finance, 6920: children and money, 6930: housing, 6940: consumer issues, 6950: marriage maintenances, 6960: work and family, 6931: household cleaning, 6941: laundry and textiles, 6932: home maintenance repairs, 6942: appliances and cookware, and 6933: insects and rodents. The topics that are covered in the dataset are broad. Thus, to make managing the dataset simpler we worked with an Extension faculty member to condense the topics into five categories. Some codes were excluded and considered data cleaning. The excluded codes are: 1111: attempted call back, 1112: program requests, 1113: coordination networking, 1114: miscellaneous. The remaining categories and the codes that are in them are displayed in Table 1. This study examined the data in a broad overall sense, and then narrowed the focus to the most commonly coded calls, which are food safety and preservation.

**Participants**

The participants are members of the public that called the Extension office in a county in a western state. No identifying data was collected, simply a zip code, gender and a topic of inquiry. There were a total of 5,863 phone calls on record with 695 male callers, 5,151 female callers, and 17 preferred to not answer. These phone calls came from 210 different zip codes, representing 24 states and territories of the United States and several international calls. The 24 states and territories were Maine, New Jersey, New York, Florida, Mississippi, West Virginia, Wisconsin, Minnesota, Illinois, Missouri,
Texas, Colorado, Wyoming, Idaho, Utah, Arizona, New Mexico, Nevada, California, Hawaii, Oregon, Washington, Alaska, and Puerto Rico. No zip code was provided for 1,159 calls.

**Data Analysis**

To examine research question one, each year in the data set was examined for frequencies of the five main topics (food safety, food preservation, nutrition, marriage and finances, and cleaning).

Research questions two and three were addressed in a similar manner. After condensing each code into the six categories outlined in Table 1. Topics were discussed with the Extension faculty member to determine the direction this study would take. The Extension faculty member suggested a focus on the food categories, specifically the safety category and food preservation, as she felt the information of this topic is the most frequently called about and would be most beneficial to her and her colleagues around the state. After consultation with a statistician a one-way independent groups ANOVA was chosen as the method that best fit the project and the statistics training of the primary author. Using the frequency of calls as the dependent variable, and the interval of time as the independent variable. After looking at the data the 10-year period has been split up in the following way 2010-2011, 2012-2015, and 2016-2019. These intervals were chosen because they followed the rough changes in overall call volume with larger decreases happening in the years that were used to divide the intervals. Although ANOVA assumes balanced sample sizes, because of the large overall sample size and the other assumptions (homogeny of variance and normality) being fully met the method is robust.
To begin the analyses, a one way- independent groups ANOVA was used to test for changes in frequency of calls in the food safety category. An additional one-way independent groups ANOVA was used to test for changes in the frequency of calls for the food preservation category. Following both ANOVAs, Fisher’s protected post hoc pairwise t-test were used to determine where the changes were happening.
### Table 1

**Categorical Organization of Codes**

<table>
<thead>
<tr>
<th>Food Safety</th>
<th>Food Preservation</th>
<th>Nutrition</th>
<th>Marriage and Finances</th>
<th>Cleaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>5720 - Shelf Life</td>
<td>5710 - Food Preservation</td>
<td>5310 - Weight Control</td>
<td>6910 - Individual and Family Finance</td>
<td>6931 - Household Cleaning</td>
</tr>
<tr>
<td>5730 - Safe Food Handling</td>
<td>5711 - Fruit</td>
<td>7300 - Food Preparation Recipes</td>
<td>6920 - Children and Money</td>
<td>6941 - Laundry and Textiles</td>
</tr>
<tr>
<td>5740 - Food Risk Assessment</td>
<td>5712 - Tomatoes</td>
<td>7310 - Weight Control</td>
<td>6930 - Housing</td>
<td>6932 - Home Maintenance Repairs</td>
</tr>
<tr>
<td>5300 - Food Preparation</td>
<td>5713 - Salsa</td>
<td>7320 - Nutrition for Special Needs</td>
<td>6940 - Consumer Issues</td>
<td>6942 - Appliances and Cookware</td>
</tr>
<tr>
<td>6340 - Water Quality</td>
<td>5714 - Vegetables</td>
<td>7330 - Eating Disorders</td>
<td>6950 - Marriage Maintenances</td>
<td></td>
</tr>
<tr>
<td>6933 - Insects and Rodents</td>
<td>5715 - Meat, Poultry, Fish</td>
<td>7340 - General Nutrition</td>
<td>6960 - Work and Family</td>
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Chapter IV

Results

Research Question One - Prevalent Topics

The prevalence of topics was examined by both the frequency of calls and the proportions of calls to determine changes in calls over time. First, the data was aggregated by month. Next, the mean monthly frequency of calls in each category was calculated per year. It was found that food preservation was consistently the most common call request across all ten years measured. Food safety calls were the second most common type of call, followed by nutrition, cleaning, and marriage and finances being the least common call request. The frequency of calls in all categories had a downward trend. With the total number of calls across all categories in 2010 being 1,049 and the total number of calls in 2019 being 382.

Food Preservation

The food preservation category was consistently the most frequent call request over all 10 years. In 2010 the food preservation category was well above all other categories with a mean monthly frequency of 41.3 calls. There was a large decrease in food preservation calls from the years 2011 to 2012. The mean monthly food preservation calls in 2011 was 41.4, then the mean monthly call requests decreased in 2012 to 24.9. Food preservation calls were fairly consistent for the next 3 years, then experienced a
smaller, but noticeable decrease from 22.1 in 2015 to 17.1 in 2016 with the mean monthly frequency still falling into 2017 where they were as low as 14.9. In the remaining two years of the data the food preservation mean monthly calls were consistent with 17.6 calls in 2018 and 17.8 calls in 2019.

**Food Safety**

Call requests in the food safety category had a consistent downward trend across all 10 years. The calls began at a mean monthly frequency of 20.7 in 2010. There was one larger decrease in numbers from 2015 where the mean monthly call frequencies were 9.45 to 2016 where the monthly mean dropped to 6.0. This drop in mean monthly frequencies of phone calls increased in 2017 to 8.0. The food safety calls continued their downward trend from there and finished 2019 with a mean monthly total of 6.3 food safety calls.

**Nutrition**

The nutrition category had a consistent downward trend in call requests starting at 13.58 mean monthly calls in 2010. The call frequencies decreased to a total of 8.2 half way through the data collection period in 2014. Finally, in 2019 the nutrition mean monthly call frequencies decreased to 3.7.
Cleaning

The beginning data point for the cleaning category was 10.9 mean monthly calls in 2010. There were then 9.6 monthly calls about cleaning in 2011. Monthly cleaning call requests fell to 3.2 in 2012, and increased to 5.8 in 2013 and then had a slight, but consistent, downward trend in mean monthly calls to 3.45 in 2019.

Marriage and Finances

Questions regarding marriage and finances were low throughout all 10 years measured. In 2010 there were 1.43 mean monthly marriage and finance related questions. This mean monthly number fell to 1 marriage and finance call in 2019. There were zero calls of this category in the years 2013, 2015, and 2017. More detail on all categories can be found in Figure 1.

Mean Calls Per Month

The data set then was divided into a figure that accounts for the means of each month in each year. While looking at the data this way there was a sharp increase in food preservation calls from July to October of each year. The numbers of food preservation calls peaked in September every year except for in 2011 where they peaked in October. In 2010 this increase of volume of calls reached 182 calls during the month of September. In 2017, the lowest number of calls were received for food preservation calls. During the peak period, there were 51 food preservation calls in the month of September. Because food safety and food preservation are the main focus of this study they are included in the figure that accounts for the means of each month in each year in Figure 2.
Figure 1: Mean Calls Per Year Across 10 Years

Note. Points represent the mean monthly number of calls for each year and error bars represent one standard deviation.
Figure 2: Number of Food Preservation and Food Safety Monthly Calls Across 10 Years

Note. Lines represent the mean number of calls per month for each year. The peaks in food presentation data are representative of peak canning season which is July through October.

Proportions of Calls

Looking at the proportion of calls and how it changed over time was also an interesting part of the data. When looking at the mean monthly proportions, overall there are not large, lasting changes. Food preservation calls are consistently leading in proportion amounts starting in 2010 with 37.9% of all calls received being about food preservation, which is fairly stable, until 2015 where it increases to 46.9%, drops to
36.5% in 2016, and in 2019 41.4% of all call requests were in the food preservation category.

Food safety was the second most common category in the data, with 29% of calls being about food safety in 2010. Then there was a steady incline until 2012 where it peaked at 36.5% and slowly decreased to 26.2% in 2017. The proportion of food safety calls increased back up to 31% in 2018, and in 2019 was 31.6% of calls received.

Third, in order of prevalence, was the calls about nutrition. These calls began with 20.4% of all calls in 2010, then were fairly stable until 2015, when they decreased to 16.1% of the calls. The next year, in 2016 the proportion of nutrition calls was back up to 22% and finished with a steady decline to 15.4% of all calls in 2019.

The proportion for cleaning calls in 2010 was 14.9%, it was stable for one year and then decreased to 6.6% in 2012. In 2013 the proportion of cleaning related calls nearly doubled to 12.5% where it remained somewhat stable until 2016 where there was an increase to 16.2%. However, the next year (2017) the proportion of cleaning call requests dropped back down to 10.8% and remained stable through the rest of the data collection period.

Because the frequency of calls regarding marriage and finances was low, the marriage and finances category also had the smallest proportion of calls. In 2010, the marriage and finances calls made up 2.3% of all calls in 2010 and remained low all 10 years. In the years 2013, 2015, and 2017 marriage and finances calls made up zero percent of the proportion of calls. By 2019, 7.1% of calls received were in the marriage and finances category. See figure 3 for more details.
Research Question Two - Food Safety Calls

Research question two was focused on food safety calls and if the amount of calls has changed over the 10 year span. A one-way independent groups ANOVA was the analysis of choice. The dependent variable was the frequency of calls and the independent variable was the interval of years, which were collapsed into three intervals (2010-2011, 2012-2015, 2016-2019).

The one-way independent groups ANOVA found there was a statistically significant difference between the frequency of food safety calls over time, $F(2, 114) = 37.84, p < .001, \eta^2 = 0.40$. Follow-up post hoc pairwise t-tests revealed a statistically significant decline in the frequency of food preservation from 2010-2011 to 2012-2015,
\( t(115) = 7.49, p < .001, d = 1.23, \) and again there was a statistically significant decline between 2012-2015 and 2016-2019, \( t(115) = 5.81, p < .001, d = 0.96. \) Overall, the downward trend in calls was greatest from 2010-2011 to 2016-2019, \( t(115) = 13.30, p < .001, d = 2.19. \) These results are depicted in Figure 4. Results of the analyses support the hypothesis that food safety calls decreased over time.

**Research Question Three - Food Preservation Calls**

Research question three was focused on food preservation calls and if the number of calls changed over the 10-year span. Once again, a one-way independent groups ANOVA was the analysis used. With the dependent variable being the frequency of food preservation calls and the independent variable being the interval of years, which were collapsed into three groups (2010-2011, 2012-2015, 2016-2019). These results are depicted in Figure 5. Results of the analyses support the hypothesis that food preservation calls decreased over time.
Figure 4: Analysis of Variance for Monthly Number of Calls for Food Safety over the Three Intervals of Time

Note. Points represent the estimate mean number of calls per month and error bars show one standard error for the mean (SEM). Brackets above list the post hoc pairwise t-test significance (e.g. p-value) and effect size (Cohen’s d). The omnibus test from the analysis of variance (ANOVA) is detailed in the lower left corner.
Figure 5: Analysis of Variance for Monthly Number of Calls for Food Preservation over the Three Intervals of Time

Note. Points represent the estimate mean number of calls per month and error bars show one standard error for the mean (SEM). Brackets above list the post hoc pairwise t-test significance (e.g. p-value) and effect size (Cohen’s d). The omnibus test from the analysis of variance (ANOVA) is detailed in the lower left corner.
Chapter V

Discussion

Research Question One - Prevalent Topics

As I discussed these topics with an Extension faculty member, food preservation and food safety were of the most interest for analysis, because of their prevalence. The findings of this study support the assessment done by the Extension faculty that these are the most common topics received in this Extension office. However, nutrition and cleaning are still questions that get asked to Extension professionals.

Marriage and finance questions are rarely asked, which may be due to a variety of things. It is a possibility that the public is not aware that Extension can be a resource for these types of questions, or that they feel that they have other, more reliable sources. They also may feel more comfortable relying on people they know personally for information about these topics. Collins and Fetsch (2009) found that couples need programs and resources available to help them strengthen their marriages. It has also been found that adults who are in healthy relationships are overall found to be happier, healthier, and more satisfied with their lives (Crapo et al., 2019). Because Extension is a vital and persistent piece of marriage education nationwide it is crucial to keep the public aware of Extension’s resources (Goddard & Olsen, 2004). All of these findings support what Palmer and Cromwell (2019) stated that Extension faculty need to not only be an expert in their chosen field, but also in many other areas. At the least Extension faculty need to be trained in where to go to find accurate information to provide answers to the
public's questions. Extension professionals are still being utilized by the public for a variety of information.

Extension is a widely-known source of food preservation and food safety information. This could be one explanation for why we see the highest numbers in these types of calls, because people know they can call the Extension office and receive safe and reliable information. As Smith et al. (2018) noted, it is essential that Extension faculty are well informed about food safety topics in order to assist the public and create impactful programming.

With the results in the monthly calls, one who is unfamiliar with Extension may be surprised at the cyclical spike that happens in the fall months with the food preservation calls. However, with my own experience of working in an Extension office, and with the experience of the Extension faculty member that I have been working with, this trend is not surprising. July through October are the peak of the canning season in the state where the data were gathered. Thus, with more people preserving their food, there are more questions about how to do so safely during these months.

While there was a general decline in nutrition-based questions over the 10 years of data, it is important to note that there are still inquiries that focus on nutrition. This is a topic that through the history of CES has been taught to all ages (Brill et al., 2014; Carlson & Garden-Robinson, 2017; Henneman et al., 2017; Ford et al., 2015). This nutrition education has proven to be impactful in a variety of ways (Carlson & Garden-Robinson, 2017). Thus, nutrition education is a vital area of education for CES. However, Extension may not be the first place the public thinks to go to for nutrition education.
Increased programming may help to push Extension to the forefront of the public’s mind with questions of this matter.

One primary purpose of the study was to help preserve the legacy of Cooperative Extension by assessing the needs of the community, and the frequencies of topics for which the public is requesting information. Results from this study indicate that food preservation, food safety, nutrition, and cleaning are all topics that are still useful for Extension professionals to be prepared to answer questions about.

It is also crucial to note that while the number of phone calls received by an office is declining, this may largely be due to other online resources becoming more widely available through Extension. Pinterest is an online source that Franzen-Castle and Henneman (2014) used to share food safety information in a common place that people search for recipes. They found Pinterest to be a valuable place to start sharing food safety information. In another study conducted by Franzen-Castle and colleagues (2015) they used Pinterest, Facebook, Twitter, and YouTube to advertise for Extension classes. Short information sessions were made available on YouTube. Furthermore, there are more people accessing online information than have historically been reached by face-to-face classes in rural areas (Mills & Hawkins, 2015). Already, over the past 10 years we have seen that there has been an increase in online presence of Extension resources, making these resources and this information more available to more people (Franzen-Castle et al., 2015; Henneman et al., 2016; Mills & Hawkins, 2015). Utilizing the technology that is available is a crucial piece of being a successful Extension educator.

Extension faculty are expected to know a large variety of information, with their specific education. One of the best ways to teach new Extension faculty all the required
skills to be successful is through mentoring. Mentoring is one practice that can help create successful Extension programs. Mentoring is when an established senior in the program works with a new professional to help support and build their career (Place & Bailey, 2010). With the move to the reliance on technology this mentoring relationship can be particularly helpful. With younger generations having more experience with technology and its uses, and the established professionals having a wealth of knowledge pertaining to classes and teaching this can be a great pairing at a time when the methods that are traditionally used to educate are changing. Both established Extension professionals and new Extension professionals can develop new skills and learn from one another (Byington, 2010; Christensen et al., 2014).

**Research Question Two - Food Safety**

The largest changes over the 10-year span that this data was collected was in food safety. We see large changes between each of the three-time intervals with the frequency of monthly calls dropping drastically from 2010-2011 to 2012-2015 and again from 2016-2019. From the post hoc tests we see that for each time period there is a large to a very large effect size noting that there is a distinctively noticeable decrease in call frequencies throughout the data collection period. One possible explanation for this is what Smith and colleagues (2018) found, that the internet is the number one source of food safety information, and the Extension office was the second to last preferred. As more food safety information is found online, there is less of a need for the public to call the Extension office. The dramatic decrease in calls concerning food safety paired with
the fact that the Extension office is the second to last place people go to for food safety information highlights the need for Extension to have an online food safety presence.

The CDC found that one in every six Americans get some type of foodborne illness each year, with 3,000 of these illnesses resulting in death (Center for Disease Control and Prevention, 2018). These foodborne illnesses and deaths could be prevented if the public was educated in the best practices of food safety. This highlights the importance of food safety continuing to be taught to the public. The rapid decrease in food safety questions to the Extension office emphasizes the need for Extension professionals to find non-traditional ways to educate. This type of education needs to be a more proactive one to help the public stay healthy.

**Research Question Three - Food Preservation**

Food preservation classes taught by Extension professionals have been shown to be successful at increasing the public’s safe food preservation practices (Taylor et al., 2014). However, even with the shown success of the education practices there was a decline in the amounts of phone calls over time received by this Extension office in this study. There was a particularly large decrease in numbers of calls from the 2010 - 2011 interval to the 2012-2015 interval. Further research could use more information about potential economic and social trends relating to phone calls and the reasoning behind such a noticeable fall in call frequencies between these two years. From the 2012-2015 interval to the 2016-2019 interval we see a trend toward statistical significance, but the p-value did not quite reach a significance of .05. As far as post hoc tests we see a large

Food preservation classes have been taught by Extension professionals since Extension’s inception over 100 years ago (Garden-Robinson et al., 2019). This is a time-tested legacy that Extension professionals need to be prepared to uphold with a firm knowledge of safe food preservation practices both in-person and with online resources. Safe food preservation is particularly important because if food preservation is not done safely it can prove fatal to the consumers of the product (Date et al., 2011). This is another area where mentoring would be effective, especially considering the seasonality of food preservation questions. This information can help Extension faculty prepare for an influx of questions from July to October. Food preservation education needs to continually be taught by reliable sources in a variety of ways to support and encourage the public in their food preservation practices.

Implications for Practitioners

The findings of this study indicate the importance of food safety and food preservation knowledge for FCS Extension professionals. Many people may view food preservation as a thing of the past. However, findings from this study demonstrate that food preservation is still a common question for CES professionals. As new FCS faculty are hired this study provides imperative information that faculty members need to be prepared with food preservation education, or at least that Extension should provide some sort of training for all Extension faculty to be educated enough to be able to answer the public’s questions.
These findings can also be helpful for practitioners by shaping the content that they create. Whether these are online or in-person classes or YouTube videos, food preservation, food safety, nutrition, and cleaning are all categories for which the public is requesting information by phone. This study could help practitioners know that the public wants to know more about these topics. This could be particularly helpful to the office that the data collection came from, but because this dataset represents 24 states and 210 zip codes it is important to note that these questions are not just coming from the area that this office is made to serve, but covers a much broader area, and thus this information could be useful to more than just the one county office.

Another way that these findings could be beneficial is to help practitioners raise awareness with the public that they are an educated source of information for marriage and finance questions. This awareness will help maintain CES’s decade long involvement in family life education (Goddard & Olsen, 2004). There are countless online marriage and family resources that have been made available to the public through CES (see healthyrelationshipsutah.org). Finding a way to make the public aware of these resources could prove vital to the maintenance of Extension’s role in marriage education.

Limitations

The main limitation of this study is that it only includes data from phone calls received by one county office. While this study along with its data may be greatly helpful for the county office that it came from, it may prove less helpful to a different county office that focuses more on different types of classes, and thus attracts different types of calls. These calls also focus on specific Family Consumer Science related topics, thus
being less helpful for other areas of expertise in the office. Furthermore, the data is limited to just phone calls, it does not address the various ways Extension faculty are contacted such as emails, personal conversations, class participants, or people finding the Extension faculty in public and asking questions.

Another limitation is there is not much detail about the sample of callers (age, ethnicity, etc.). Without these details it is harder to determine the generalizability of the data, or how representative the data is of the general population this particular office serves. It is a possibility that certain individuals are more likely to use the phone to find answers to their questions compared to other individuals who may look to different sources.

**Future Studies**

In the future, a more advanced statistical analysis of this data may provide an even greater insight into understanding changes in the trends in data. Additionally, it would be interesting to see how the call frequencies and topics change in a year of economic downturn. This data is outside the range of two hallmark years of economic crisis in the United States (2008 - the Great Recession and 2020 - Coronavirus Pandemic). A study similar to this during years of economic turbulence could give insight into the changes in the public’s focuses and needs during times of crisis. Anecdotally, the Extension faculty member who collected this data noticed higher numbers of food safety and food preservation calls in 2020 than a few years prior, due to a disrupted food supply, increased gardening, and lack of canning supplies available in stores and online.
Another study that could be done is to assess the public and their awareness of what CES is and what types of services that they offer. Research is showing that consumers are interested in food related topics (Narine, 2019) but follow-up research could target awareness of Extension. It is possible that majority of the public knows CES for its food preservation and food safety classes and information, thus attracting more calls of that type. A more qualitative study to see where the public’s information of CES is could help direct a way for future marketing and advertising of classes and services offered.

The internet has become a crucial way of sharing information, particularly for reliable sources of evidence-based information like Extension (Franzen-Castle et al., 2015; Franzen-Castle & Henneman, 2014; Henneman et al. 2016; Mills & Hawking, 2015). Another related future study could connect internet-searched topics discussed in this study to the use or “hits” of CES’s online resources. Extension has a growing online presence in various forms. Collecting data from frequency of visits on extension websites could help extension faculty know which topics are being used and how well they are reaching the public. CES is represented in social media, blogs, online courses, as well as instructional videos. Is the decrease in calls reflected in an increase in the use of online resources? This could be potentially helpful information to CES faculty across the US.

Conclusion

As previously discussed, the purpose of CES is to extend education to Americans (The Smith-Lever Act of 1914, 2014). Faculty members become educated on science-based research and then make it available in easier to understand ways for the public
(National Institution of Food and Agriculture, n.d.). However, because of the broad range of services offered by Extension it requires that Extension professionals not only be experts in their chosen field, but in many others as well (Berven et al., 2020; Harder & Narine, 2020). Keeping up with the needs of the public is a crucial part in preserving the legacy of Cooperative Extension Service.

By studying the trends in topics that the public calls about from 2010 to 2019 it has been found the most common topics are food preservation and food safety. However, nutrition and cleaning are still relevant topics of interest. The findings did not support a strong relevance for marriage and finances questions, but once again, these are only questions that come over the phone. It was also found that there is a downward trend in calls in all of the above categories, but it was a significant decline in food safety and food preservation calls. The frequency of calls may be decreasing, but the proportions of calls are fairly consistent. These topics are likely to continue to come up on questions to Extension faculty. The public may no longer be relying on CES to find answers and may be turning to less reliable sources to find answers to their questions, or they may be relying on CES’s online resources. These findings show the importance of Extension educators utilizing a variety of educational platforms to reach the public.
References


https://extension.usu.edu/employee/program-evaluation/statewide-needs-assessment


