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Consumer Preferences and Willingness to Pay for Wreath Designs



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INTRODUCTION

Florists are defined in sector 453110 of the North American Industry Classification System (NAICS, 2018) as the industry that "comprises establishments known as florists primarily engaged in retailing cut flowers, floral arrangements, and potted plants purchased from others. These establishments usually prepare the arrangements they sell." The florist sector generates significant economic impact on the United States economy. Recent estimates showed that the annual economic contribution of the industry amounted to $5.56 billion (Hodges et al., 2016). The industry also created 132,000 jobs, generated $3.05 billion in labor income, and paid $570 million in business taxes.

The overall goal of this study was to better understand the markets for wreath designs by local florists. Specifically, the researchers wanted to learn more about various market segments of potential buyers of locally made wreaths. Producers of cut ornamental flowers and foliage can augment sales with value-added products such as wreaths during the fall and winter months when other crops are finished. Many people like to decorate their homes, businesses, and places of worship with wreaths for special occasions and holidays.

Results of previous consumer studies illustrate how local ornamental plants or plant materials were evaluated for their suitability in designing and creating ornamental consumer products. Mayett-Moreno et al. (2018) compared consumers' and retailers' knowledge of a native ornamental plant in Mexico and identified potential clusters of consumers and retailers based on their knowledge and preferences. This understanding of consumers' and retailers' knowledge and preferences enabled producers to develop a marketing strategy best suited to different market segments, leading to the sustainable commercialization of production.

Posadas et al. (2006) surveyed consumers to determine the levels of liking and willingness to pay for selected garden chrysanthemum cultivars and to measure the relative influence of socioeconomic characteristics on consumer preferences and valuations. The authors of the chrysanthemum survey concluded that "the new cultivars that nursery growers should consider for commercial production should be initially limited to those that the participants liked most and were willing to pay the most. The promotion of the new cultivars should be concentrated on consumer groups who stated higher liking and willingness to pay for them."

Consumers like locally grown products. Short et al. (2017) reported consumers were willing to pay at least the same amount for locally grown *Helianthus* annuus 'Firecracker' compared to similar imports, with women and those preferring to buy local products more likely to make purchases. Mississippi consumers are willing to pay a premium for Mississippi-produced cut flowers (Hudson and Griffin, 2004).

MATERIALS AND METHODS

Primary Data Collection

Face-to-face interviews were conducted with participants of various Mississippi State University Extension Service and Mississippi Agricultural and Forestry Experiment Station horticulture-related events in different locations (Table 1). Respondents were recruited to participate in the survey using the scripts in the letter of recruitment (Appendix A). All respondents who agreed to participate in the survey were provided a copy of the questionnaire (Appendix B) and photos of the six wreath designs. They were requested to indicate their levels of liking for each of the six wreath designs. They were also asked to state how much they were willing to pay for each of the six wreath designs for their home or to give as a gift (Appendix B). Additional information about the socioeconomic characteristics of the respondents was gathered. Respondent's characteristics included age, gender, formal education completed, household income, race, and household size.

Wreath Designs

A series of decorative wreaths using Mississippi-grown plant materials were designed, constructed, and photographed on October 11, 2016. Wreath contents were chosen based upon recommendations by garden club members, retail florists, and Extension floral design clientele. Materials selected in the construction of the wreaths are abundant in Mississippi. Wreaths were displayed at the Fall Flower and Garden Fest in Crystal Springs, Mississippi. Other data-gathering sites used images of the wreaths presented in poster form, and electronic versions were used in the online version.

Table 2 shows the basic descriptions of the six wreaths designs used in this survey. The clamp machine, associated table, and 14-inch clamp wreath forms were purchased from Sheerlund Products of Reading, Pennsylvania (https://sheerlundproducts.com/), pan-melt glue and paper-covered wire from Smithers-Oasis of Kent, Ohio (http://www.oasisfloral.com/), standard wire wreath frame from FloraCraft of Ludington, Michigan (http://www.floracraft.com/), and 1,2,3-Propanetriol (vegetable glycerin) from Bulk Apothecary (https://www.bulkapothecary.com/). Plant materials were grown and harvested from the Beaumont Horticulture Unit in Beaumont, Mississippi, MSU Coastal Research and Extension Center in Biloxi, Mississippi, and MSU R. R. Foil Plant Science Research Center in Starkville, Mississippi. Construction times do not include harvesting. Costs associated with each wreath were determined using seasonal wholesale price lists, as well as price lists from the manufacturers, Florabundance of Carpinteria, California (https://www.florabundance.com/), and DriedDecor.com (https://www.drieddecor.com/). Estimates do not include construction labor or wreath machine investment.

Consumer Preference Empirical Models

The level of liking (LOL) model for the six wreath designs was estimated by using an ordered logit method, as adopted from Posadas et al. (2006). Respondents were asked to describe how much they like each of the six wreath designs. Possible LOL values ranged from 1 to 7, where (1, 2, 3) = strongly do not like this design; (4) = neither like nor dislike the design; and (5, 6, 7) = strongly like this design. The empirical model used in estimating the LOL model is as follows (Equation 1):

$$LOL_i = ß_0 + ß_1 x\ WD + ß_2 x\ PP + ß_3 x\ LT + ß_4 x\ SEC + É \qquad \text{Eqn. 1}$$

where LOL = a seven-point scale level of liking.

Independent variables included in Eqn. 1 were the wreath designs (WD), previous purchases (PP), location and type of survey (LT), and socioeconomic characteristics (SEC) of the respondents.

Table 1. Face-to-face and online surveys of consumer preferences for wreath designs.

Location and type of survey	Number of respondents	Percent of total
Oct. 2016 — Fall Flower and Garden Fest, Crystal Springs, MS	223	64.27
Sept. 2017 — Mississippi Homemaker Volunteers, Biloxi, MS	34	9.80
Oct. 2017 — Beautiful Things for Mississippi, Biloxi, MS		1.15
Oct. 2017 — Ornamental Horticulture Field Day, Poplarville, MS	40	11.53
Feb. 2017 — Producer Advisory Council Meeting, Biloxi, MS		2.02
Oct. 2017 — Online Survey at SurveyMonkey.com	39	11.24
Total	347	100.00

Table 2. Basic descriptions of the wreath designs.

Code	Name of design	Outside diameter	Inside diameter	Construction time	Weight	Materials cost
A	Corkscrew Willow Wreath	40 in (101.6 cm)	12 in (30.48 cm)	30 min	1.78 lb (0.80 kg)	$45.95
B	Preserved Magnolia Wreath	22 in (55.88 cm)	8 in (20.32 cm)	30 min	1.83 lb (0.83 kg)	$44.45
C	Fresh Magnolia Wreath	24 in (60.96 cm)	6 in (15.24 cm)	30 min	3.01 lb (1.38 kg)	$43.45
D	Slash Pine and Magnolia Wreath	26 in (66.04 cm)	8 in (20.32 cm)	30 min	3.37 lb (1.53 kg)	$43.45
E	Mixed Row Crop Wreath	25 in (63.50 cm)	6 in (15.24 cm)	60 min	7.17 lb (3.25 kg)	$34.45
F	Pine Cone Wreath	22 in (55.88 cm)	8 in (20.32 cm)	70 min	4.62 lb (2.10 kg)	$139.95

- $ß_i$ = coefficients.
- Wreath designs = six wreath design were included in the survey (Table 2). As a standard practice in regression analysis, one of the wreath designs was excluded from the models to eliminate the problem of singularity.
- Previous purchases = number of wreaths bought last year.
- Location and type of survey = there were six locations and types of survey (Table 1). One of the locations was excluded from the model estimation.

Socioeconomic characteristics of the respondents include age, gender, formal education completed, household income, race, and household size:

- Ageyear = age (yr) was determined by asking the respondents to state the year they were born.
- Gender = respondents were asked to indicate their gender.
- Educyear = formal education (yr) was determined by asking the respondents to indicate the years of formal education they completed.
- Household income was reported in eight income groups: 1 — less than $25,000; 2 — $25,000 to $50,000; 3 — $50,001 to $75,000; 4 — $75,001 to $100,000; 5 — $100,001 to $150,000; 6 — $150,001 to $200,000; 7 — $200,001 to $250,000; 8 — more than $250,000; No answer; and No income.

A willingness to pay (WTP) model for the six wreath designs was estimated by using the ordinary least square procedure (OLS), as adopted from Posadas et al. (2006). The dependent variable, WTP, was measured in dollars per wreath at the retail level. The empirical model used in estimating the WTP model is as follows (Eqn. 2):

$$WTP_i = ß_0 + ß_1 x\ WD + ß_2 x\ PP + ß_3 x\ LT + ß_4 x\ SEC + É \qquad \text{Eqn. 2}$$

where WTP = willingness to pay ($/wreath) and the independent variables are as described in Eqn. 1.

Statistical Analysis

Level of liking was initially compared by wreath design. One-way analysis of variance and Scheffe test were performed to determine any statistical differences between the level of liking by wreath design.

WTP was initially compared by wreath design. One-way analysis of variance and Scheffe test were performed to determine any differences in the WTP by wreath design.

To determine the significant factors affecting LOL and WTP, the empirical models defined by Eqn. 1 and 2 were estimated by using the ordered logit and ordinary least square (OLS) procedure, respectively. The robust variance procedure calculated the regression models in Stata 15 (StataCorp, College Station, Texas). Precise calculations of the sample-to-sample variations of the parameter estimates are attained with the robust variance procedure (Rogers, 1993; Williams, 2000).

Marginal LOL and WTP with respect to changes in any of the independent variables were expected to be zero. If marginal LOL or WTP was positive, then an increase in the value of any of the independent variables would lead to an increase in the respondent's LOL or WTP for the wreath designs. If the marginal value was less than zero, then the respondent's LOL or WTP would decrease as the value of the independent variable increased (Posadas et al., 2006).

DESCRIPTIONS AND MATERIALS USED IN WREATH DESIGNS

Design names, photographs, complete descriptions, materials used in construction, levels of liking, and willingness to pay for all the six wreath designs are shown in Figures 1–6. There are six wreath designs included in the survey: (1) Corkscrew Willow Wreath, (2) Preserved Magnolia Wreath, (3) Fresh Magnolia Wreath, (4) Slash Pine and Magnolia Wreath, (5) Mixed Row Crop Wreath, and (6) Pine Cone Wreath.

The Corkscrew Willow wreath has a 40-inch outside diameter and weight of 1.78 pounds. It takes about 30 minutes to construct using a clamp machine and associated clamp wire form and is made of *Salix matsudana* 'Koidzumi' branches approximately 28 inches long. Respondents "neither like nor dislike" the design and gave an average LOL = 4.51 on a scale of 7. They are willing to pay, on average, $22.52 each for this wreath, which is made from $45.95 worth of wholesale value materials.

The Preserved Magnolia wreath is made from branches of *Magnolia grandiflora* 'Little Gem,' approximately 14 inches long, which, prior to design, were preserved in a 50% glycerin solution taken up systemically (DelPrince, 2016; Koch, 1995). It has a 22-inch outside diameter and weight of 1.83 pounds. It takes about 30 minutes to construct. The respondents "neither like nor dislike" the design and gave an average LOL = 4.76 on a scale of 7. They are willing to pay, on average, $26.17 for the Preserved Magnolia wreath, which is made with $44.45 in wholesale materials.

The Fresh Magnolia wreath uses branches cut at 18-inch lengths and has a 24-inch outside diameter and weight of 3.01 pounds. It takes about 30 minutes to construct using a clamp machine and associated clamp wire form and is made of *Magnolia grandiflora*. The respondents "liked" the design and gave an average LOL = 5.45 on a scale of 7. They are willing to pay, on average, $31.77 each for this wreath. Its wholesale cost of materials is $43.45.

The Magnolia and Pine wreath has a 26-inch outside diameter and weight of 3.37 pounds. It takes about 30 minutes to construct using clamp machine and associated clamp wire form and is made of *Magnolia grandiflora* and *Pinus elliottii* branches approximately 18 inches long. The respondents "like" the design and gave an average LOL = 5.24 on a scale of 7. They are willing to pay, on average, $27.09 each for this wreath, which uses $43.45 worth of wholesale materials.

The Mixed Row Crop wreath was made using three stems of *Abelmoschus esculentus* (okra), three fruits of *Curcubita pepo* cv. (mini pumpkin), 10 stems of *Gossypium* sp. (cotton), eight stems of *Sorghum bicolor* (milo), and three ears of *Zea mays* (corn). The wreath was constructed using a clamp machine and associated form. *Curcubita* and *Zea* were attached using pan-melt glue and the *Zea* reinforced with paper-covered wire binding. The wreath has an outside diameter of 25 inches and weight of 7.17 pounds. Construction time is 60 minutes. The respondents "liked" the design, rating it an average LOL = 5.28 on a scale of 7. They are willing to pay, on average, $29.41 for the wreath. Material costs for this wreath is $34.45.

The Pine Cone wreath is made with 92 *Pinus elliottii* cones, each individually wired to an 18-inch wire wreath frame with 12-inch, paper-covered wire segments. It has a 22-inch outside diameter and weight of 4.62 pounds. It takes about 70 minutes to construct. The respondents "liked" the design and gave an average LOL = 5.52 on a scale of 7. They are willing to pay, on average, $28.89 for the wreath, which uses $139.95 worth of materials.

Figure 1. Design Code — A

Design Name — Corkscrew Willow Wreath

Description
40-inch outside diameter (101.6 cm)
12-inch inside diameter (30.48 cm)
30-minute construction time
Fresh weight 1.78 pounds (.80 kg)

Materials Used
Corkscrew Willow *Salix matsudana* 'Koidzumi'
14-inch clamp-type wreath ring
Clamp machine

Level of liking — 4.51
Willingness to pay — $22.52 per wreath
Materials cost — $45.95

Figure 2. Design Code — B

Design Name — Preserved Magnolia Wreath

Description
22-inch outside diameter (55.88 cm)
8-inch inside diameter (20.32 cm)
30-minute construction time
Fresh weight 1.83 pounds (.83 kg)

Materials Used
Magnolia grandiflora 'Little Gem' (glycerin preserved)
14-inch clamp-type wreath ring
Clamp machine

Level of liking — 4.76
Willingness to pay — $26.17 per wreath
Materials cost — $44.45

Figure 3. Design Code — C

Design Name — Fresh Magnolia Wreath

Description

Leaf front and back used
24-inch outside diameter (60.96 cm)
6-inch inside diameter (15.24 cm)
30-minute construction time
Fresh weight 3.01 pounds (1.38 kg)

Materials Used

Magnolia grandiflora Southern Magnolia
14-inch clamp-type wreath ring
Clamp machine

Level of liking — 5.45
Willingness to pay — $31.77 per wreath
Materials cost — $43.45

Figure 4. Design Code – D

Design Name — Slash Pine and Magnolia Wreath

Description

26-inch outside diameter (66.04 cm)
8-inch inside diameter (20.32 cm)
30-minute construction time
Fresh weight 3.37 pounds (1.53 kg)

Materials Used

Pinus elliottii Slash Pine
Magnolia grandiflora Southern Magnolia
14-inch clamp-type wreath ring
Clamp machine

Level of liking — 5.24
Willingness to pay — $27.09 per wreath
Materials cost — $43.45

Figure 5. Design Code — E

Design Name — Mixed Row Crop Wreath

Description

25-inch outside diameter (63.5 cm)
6-inch inside diameter (15.24 cm)
60-minute construction time
Fresh weight 7.17 pounds (3.25 kg)

Materials Used

Abelmoschus esculentus Okra
Cucurbita pepo cv. Mini Pumpkin
Gossypium sp. Cotton
Sorghum bicolor Milo
Zea mays Corn
14-inch clamp-type wreath ring
Clamp machine
Paper-covered wire

Level of liking — 5.28
Willingness to pay — $29.41 per wreath
Materials cost — $34.45

Figure 6. Design Code – F

Design Name — Pine Cone Wreath

Description

22-inch outside diameter (55.88 cm)
8-inch inside diameter (20.32 cm)
70-minute construction time
Fresh weight 4.62 lb. (2.10 kg)

Materials Used

18-inch (45.72 cm) flat wire wreath frame
Paper-covered wire
92 *Pinus elliottii* Slash Pine cones

Level of liking — 5.52
Willingness to pay — $28.89 per wreath
Materials cost — $139.95

RESPONDENTS' CHARACTERISTICS

There were 347 respondents to the survey conducted between October 2016 and October 2017 (Table 1). Survey respondents are compared by socioeconomic characteristics to determine the level of homogeneity of the survey participants (Table 3).

Age

The average age of respondents was 60.88, with a deviation of 14.83 (Table 3). The age distribution of the respondents is skewed to the right or toward the older age groups (Figure 7).

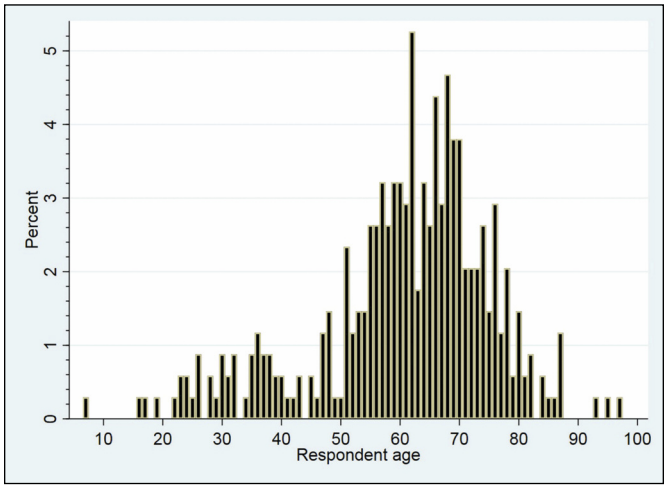

Figure 7. Histogram of respondents by age.

Gender

Female respondents consisted 79.7% of all the survey participants (Table 3). More than 12% were males, and 7.83% did not state their gender.

Race

Caucasians dominated the survey participation with 74.25% of all the respondents (Table 3). Asians or Pacific Islanders were second (11.38%). The third group was African Americans, who consisted of 7.78%. The fourth group of survey participants was Native Americans (4.19%). The rest of the participants were Hispanics and other racial groups.

Table 3. Respondents' characteristics.

Characteristics	Number	Deviation/Percent
Average age of respondent (yr) ***	60.88	14.83
Average formal education of respondent (yr) ***	14.26	4.10
Average household size ***	2.34	1.31
Average number of wreaths bought last year ***	1.21	1.85
Respondents distribution by gender: ***		
Female respondents	275	79.71
Male respondents	43	12.46
No answer	27	7.83
Respondents distribution by household income: ***		
Less than $25,000	41	13.95
$25,000 to $50,000	53	18.03
$50,001 to $75,000	67	22.79
$75,001 to $100,00	53	18.03
$100,001 to $150,000	50	17.01
$150,001 to $200,000	20	6.80
$200,001 to $250,000		0.34
More than $250,000		2.04
No income		1.02
Respondents distribution by race: ***		
Native American	14	4.19
Caucasian	248	74.25
African American	26	7.78
Hispanic		0.30
Asian or Pacific Islander	38	11.38
Others		2.10

*** — statistically significant at 0.001 concerning the location and type of survey.

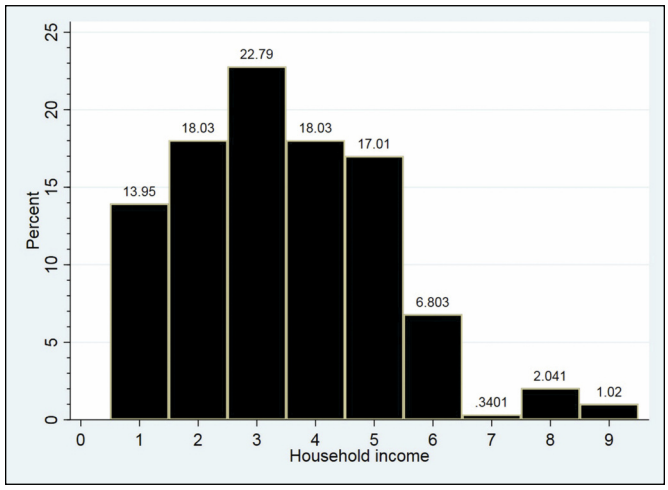

Figure 8. Histogram of respondents by household income. Legend: 1 — less than $25,000; 2 — $25,000 to $50,000; 3 — $50,001 to $75,000; 4 — $75,001 to $100,000; 5 — $100,001 to $150,000; 6 — $150,001 to $200,000; 7 — $200,001 to $250,000; 8 — more than $250,000; and 9 — No income.

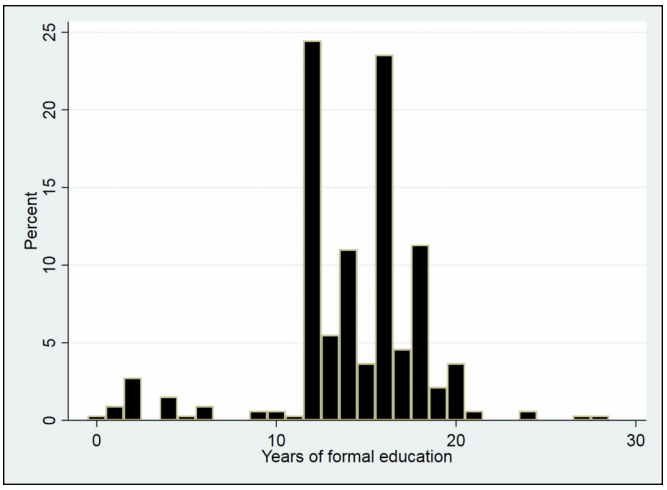

Figure 9. Histogram of respondents by years of formal education completed.

Household Income

There were eight income groups included in the survey starting from "less than $25,000" to "more than $250,000" (Table 3). Additionally, two more items captured those who did not have any income or did not respond to the question. Fifteen percent of all the respondents, who did not specify their household income, were excluded in the income distribution. The distribution of respondents by household income is skewed to the left or toward the lower and middle-income groups (Figure 8).

Formal Education

Level of formal education completed by the respondents averaged 14.26 with a deviation of 4.10 (Table 3). Distribution of respondents by formal education achieved is concentrated between a high-school diploma and a graduate education (Figure 9).

Household Size

The number of persons living in the households of respondents averaged 2.34 persons with a deviation of 1.31 (Table 3). Distribution of respondents by household size is skewed to the left or less than three persons per household (Figure 10).

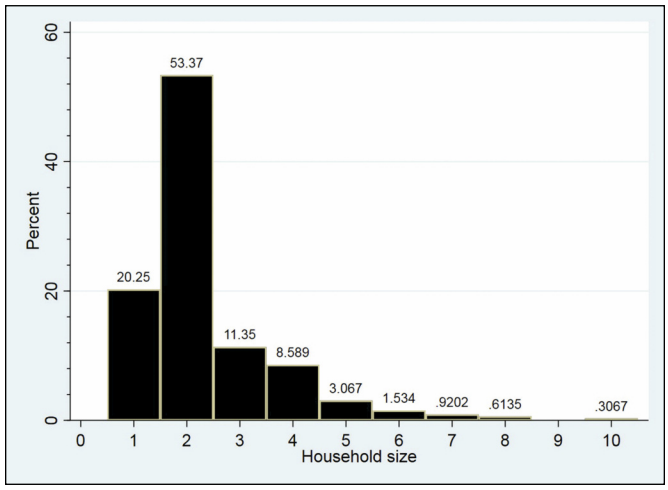

Figure 10. Histogram of respondents by household size.

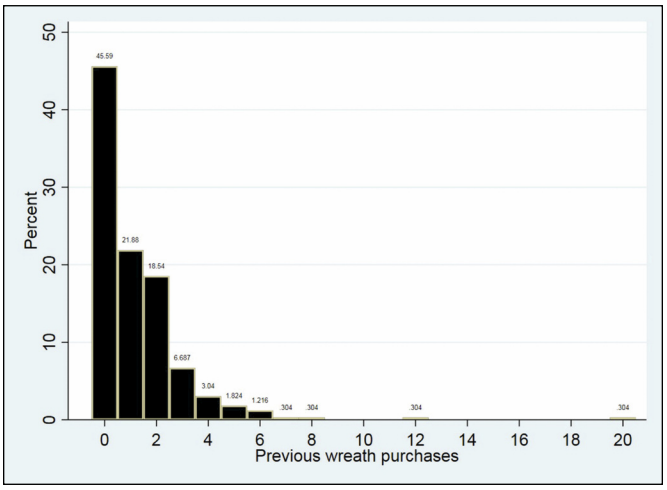

Figure 11. Histogram of respondents by previous year's wreath purchases.

Previous Wreath Purchases

The respondents reported an average of 1.21 wreaths purchased the previous year with a deviation of 1.85 wreaths (Table 3). The distribution of respondents with respect to previous year's wreath purchases is skewed to the left or two or fewer wreaths per household (Figure 11).

DETERMINANTS OF THE LEVELS OF LOL AND WTP

The analysis of the levels and determinants of the levels of liking and willingness to pay for the six wreath designs included all the 347 respondents who participated in the survey. There were six wreath designs included in the survey: Corkscrew Willow Wreath, Preserved Magnolia Wreath, Fresh Magnolia Wreath, Slash Pine and Magnolia Wreath, Mixed Row Crop Wreath, and Pine Cone Wreath.

Levels of Liking for Wreath Designs

There are seven possible ranks of the level of liking. Values 1–3 indicate that the respondent "strongly does not like" the wreath design (Appendix B). A value of 4 denotes that the respondent "neither likes nor dislikes" the wreath design. Values 5–7 implies that the respondent "strongly likes" the wreath design.

Distribution of the levels of liking of the respondents for all the six wreaths design is skewed from the center to the right. The respondents generally "neither like nor dislike" (4) or "strongly like" (5-7) the wreath designs (Figure 12).

Ordered logit results indicate that the estimated equation is significant as shown by the Wald chi-square statistic. However, the pseudo-R-squared statistic signifies a limited explanatory property of the estimated regression model regarding the level of liking of the six wreath designs (Table 4).

When rated according to the level of liking by wreath design, two groups of rankings are identified. The no preference or "neither liked nor disliked" group of designs include Corkscrew Willow Wreath and Preserved Magnolia Wreath with LOL = 4.52 and 4.76,

Table 4. Ordered logit results of the levels of liking for six wreath designs.

Independent variable	Coefficient	Standard error
Wreath designs:		
Corkscrew Willow Wreath [a]		
Preserved Magnolia Wreath [ns]	0.192	0.153
Fresh Magnolia Wreath [***]	1.097	0.159
Slash Pine and Magnolia Wreath [***]	0.884	0.160
Mixed Row Crop Wreath [***]	1.004	0.185
Pine Cone Wreath [***]	1.151	0.160
Previous wreath purchases [ns]	0.042	0.028
Location and type of survey:		
Oct. 2016 — Fall Flower and Garden Fest [a]		—
Sept. 2017 — Mississippi Home Volunteers [ns]	0.601	0.353
Oct. 2017 — Beautiful Things for Mississippi [ns]	-0.002	0.240
Oct. 2017 — Ornamental Horticulture Field Day [*]	0.412	0.193
Feb. 2017 — Producer Advisory Council Meeting [*]	0.389	0.130
Oct. 2017 — Online Survey at SurveyMonkey.com [*]	-0.580	0.198
Respondent age [ns]	-0.005	0.003
Male respondent [*]	-0.264	0.133
Years of formal education completed [ns]	-0.019	0.012
Household size [ns]	-0.035	0.032
Household income [ns]	0.023	0.096
White American respondent [*]	-0.342	0.147
Number of observations	1,644	
Wald chi-squared	141.55	
Pseudo R-squared	0.02	

*, **, *** — statistically significant at 0.001, 0.01, 0.05.
ns — not statistically significant at 0.05.
a — set as the base variable.

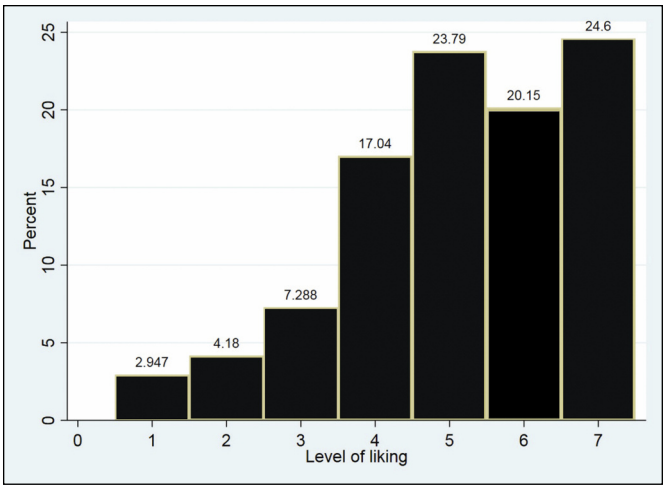

Figure 12. Histogram of respondents by levels of liking of wreath designs.

respectively (Figure 13). The Preserved Magnolia Wreath is equally "neither liked nor disliked" by the respondents concerning Corkscrew Willow Wreath. Marginal LOL of the Preserved Magnolia Wreath over the base design or the Corkscrew Willow Wreath is not significantly different from zero (Table 4).

The preferred or "strongly liked" group of designs include Fresh Magnolia Wreath, Slash Pine and Magnolia Wreath, Mixed Row Crop Wreath, and Pine Cone Wreath with LOL between 5.26 and 5.52 (Figure 13). Marginal LOL of these four wreath designs over the base design or the Corkscrew Willow Wreath is highly significantly different from zero and range from 0.884 to 1.151 (Table 4).

Using these marginal LOL values over the base wreath design, we can rank the Pine Cone Wreath as the highest-ranked design with marginal LOL of 1.15. The second-ranked wreath design is the Fresh Magnolia Wreath with marginal LOL value of 1.09. The third-ranked wreath design is the Mixed Row Crop Wreath (1.00). The fourth-ranked wreath design is the Slash Pine and Magnolia Wreath with a marginal LOL of 0.88.

The number of wreaths purchased the previous year did not significantly influence the level of liking of the wreath designs. Marginal LOL over previous wreath purchases was not substantially different from zero (Table 4).

Location and type of survey exerted mixed influences over the level of liking for the wreath designs. First, with the 2016 Fall Flower and Garden Fest as the base survey location, the LOL among the respondents from the 2017 Mississippi Home Volunteers and the 2017 Beautiful Things for Mississippi was not significantly different from each other. Second, the 2017 Producer Advisory Council Meeting and the 2017 Ornamental Horticulture Field Day survey participants assigned significantly higher LOL over those at the base survey location. Finally, participants at the 2017 Online Survey at SurveyMonkey.com expressed significantly lower LOL than those at the base survey location. The marginal LOL of the first two survey locations are equal to zero, that of the second two survey locations are greater than zero, and the last survey location is less than zero (Table 4).

Age of the respondents did not have any significant effect on the level of liking of the various wreath designs. Marginal LOL of the age of the respondents is not significantly different from zero (Table 4).

Gender of the respondents exerted substantial influence over the level of liking of wreath designs included in the survey. Male respondents tended to express lower LOL for the wreath designs as compared to other respondents. Marginal LOL of male respondents is significantly less than zero (Table 4).

Race of the respondents applied profound impact on the level of liking of different wreath designs included in the survey. Caucasian respondents stated significantly lower LOL as compared with other races. Marginal LOL of Caucasian respondents is considerably less than zero (Table 4).

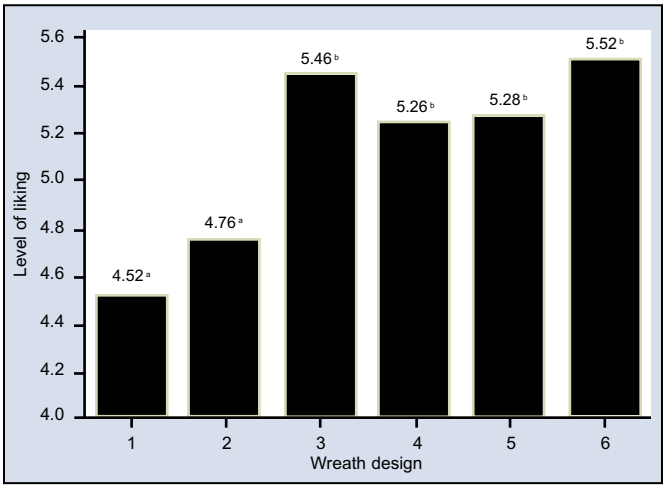

Figure 13. Means of respondents' levels of liking by wreath designs. Legend: 1 — Corkscrew Willow Wreath, 2 — Preserved Magnolia Wreath, 3 — Fresh Magnolia Wreath, 4 — Slash Pine and Magnolia Wreath, 5 — Mixed Row Crop Wreath, and 6 — Pine Cone Wreath. Means with the same letter are not significantly different at 0.05.

Table 5. Ordinary least squares regression results of the willingness to pay for wreath designs.

Independent variable	Coefficient	Standard error
Wreath designs:		
Corkscrew Willow Wreath [a]		
Preserved Magnolia Wreath [ns]	3.527	2.030
Fresh Magnolia Wreath [***]	9.701	2.398
Slash Pine and Magnolia Wreath [*]	4.826	2.016
Mixed Row Crop Wreath [**]	7.279	2.293
Pine Cone Wreath [***]	7.007	2.084
Previous wreath purchases [ns]	-0.022	0.333
Location and type of survey:		
Oct. 2016 — Fall Flower and Garden Fest [a]		—
Sep. 2017 — Mississippi Home Volunteers [ns]	0.038	4.534
Oct. 2017 — Beautiful Things for Mississippi [ns]	-0.410	3.955
Oct. 2017 — Ornamental Horticulture Field Day [ns]	1.325	2.783
Feb. 2017 — Producer Advisory Council Meeting [***]	12.287	2.261
Oct. 2017 — Online Survey at SurveyMonkey.com [***]	13.327	3.710
Respondent age [***]	-0.494	0.072
Male respondent [ns]	0.791	2.464
Years of formal education completed [***]	-0.571	0.146
Household size [***]	-2.344	0.539
Household income [ns]	2.566	1.445
White American respondent [ns]	-4.464	2.893
Number of observations	1075	
F-value [***]	8.05	
R-squared	0.192	

*, **, *** — statistically significant at 0.001, 0.01, 0.05.
ns — not statistically significant at 0.05.
a — set as the base variable.

The three other socioeconomic characteristics of the respondents did not have any significant effects on LOL for the wreath designs included in the survey. Level of formal education completed by the respondents did not influence LOL. The number of persons living in the respondents' households exerted no significant impact on LOL. Respondents with annual household incomes exceeding $75,000 did not express significantly different LOL for the wreath designs than respondents with lesser household income. Marginal LOL values of these three independent variables are not significantly different from zero (Table 4).

Willingness to Pay for Wreath Designs

Willingness to pay for the six wreath designs as stated by the survey participants ranges from zero to $250 per wreath (Figure 14). The average WTP is $27.68 per wreath with a deviation of 24.04. Distribution of the willingness to pay for all the six wreath designs is skewed to the left or less than $50 per wreath.

Ordinary least squares regression results showed that the estimated equation is significant as shown by the substantial F-value. The R-squared statistic signifies considerable explanatory property of the estimated regression model regarding the willingness to pay for the six wreath designs (Table 5).

When ranked according to the willingness to pay by design, the six wreath designs included in the survey are valued by the respondents from highest to lowest WTP as follows: (1) Fresh Magnolia Wreath, $31.78; (2) Mixed Row Crop Wreath, $29.42; (3) Pine Cone Wreath, $28.90; (4) Slash Pine and Magnolia Wreath, $27.09; (5) Preserved Magnolia Wreath, $26.18; and (6) Corkscrew Willow Wreath, $22.53 (Figure 15).

Using the marginal WTP values over the base wreath design—the Corkscrew Willow Wreath—we arrive at the same rankings of the wreath designs from the most valuable to least valuable design, as follows: (1) Fresh Magnolia Wreath, $9.701; (2) Mixed Row Crop Wreath, $7.279; (3) Pine Cone Wreath, $7.007; (4) Slash Pine and Magnolia Wreath, $4.826; and (5) Preserved Magnolia Wreath, $3.527.

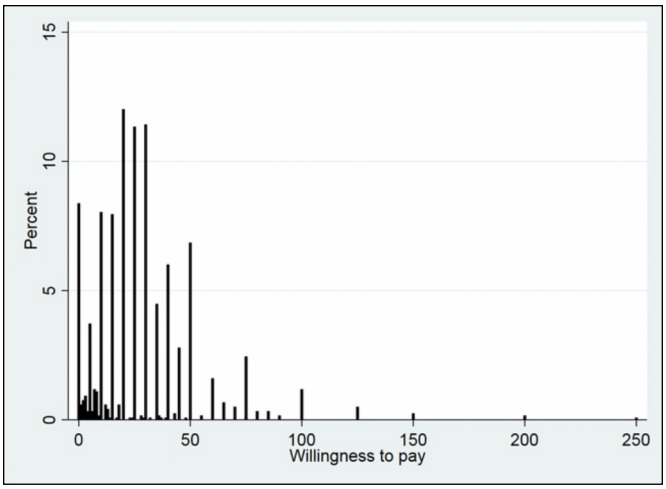

Figure 14. Histogram of respondents by willingness to pay for wreath designs.

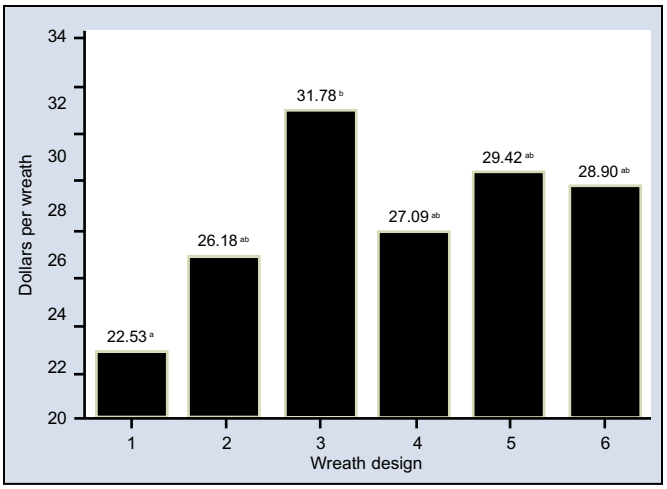

Figure 15. Means of the respondents' willingness to pay for wreath designs. Legend: 1 — Corkscrew Willow Wreath, 2 — Preserved Magnolia Wreath, 3 — Fresh Magnolia Wreath, 4 — Slash Pine and Magnolia Wreath, 5 — Mixed Row Crop Wreath, and 6 — Pine Cone Wreath. Means with the same letter are not significantly different at 0.05.

SUMMARY, LIMITATIONS, AND IMPLICATIONS

A survey of 347 respondents was conducted from October 2016 to October 2017 in Mississippi to better understand the markets for wreath designs by local florists. Most respondents were female, they averaged about 60 years old, and they completed an average of 14 years of formal education. More than two-thirds reported annual household incomes of more than $50,000. More than one-half of the respondents lived in two-person households. Almost three-fourths were Caucasians. Purchases of wreaths by the respondents during the past year averaged more than one wreath per household.

Survey respondents expressed a "neither like nor dislike" rating for two wreath designs and a "strongly like" rating for four wreath designs. "Neither like nor dislike" ratings included Corkscrew Willow Wreath and Preserved Magnolia Wreath. "Strongly like" ratings included Fresh Magnolia Wreath, Slash Pine and Magnolia Wreath, Mixed Row Crop Wreath, and Pine Cone Wreath. The Pine Cone Wreath was the highest-ranked design, followed by the Fresh Magnolia Wreath, the Mixed Row Crop Wreath, and the Slash Pine and Magnolia Wreath.

Type of wreath designs and socioeconomic characteristics of survey participants exerted mixed influences on the levels of liking for the six wreath designs included in the study. Previous year's purchases did not significantly influence the level of liking of the wreath designs. Location and type of survey exerted mixed influences over the level of liking for the wreath designs. Age of the respondents did not have any significant effect on the level of liking of the various wreath designs. Male respondents tend to express a lower level of liking for the wreath designs as compared to other respondents. Caucasian respondents had a more moderate level of liking as compared to other races. Formal education, household size, and household income of the respondents did not have any significant effects on the level of liking for the wreath designs.

Type of wreath designs and socioeconomic characteristics of respondents exerted mixed pressures on the willingness to pay for the six wreath designs included in the investigation. On average, respondents said they were willing to pay about $27.68 per wreath. The most valued wreath design was the Fresh Magnolia Wreath, followed by the Mixed Row Crop Wreath. In third place was the Pine Cone Wreath, followed by the Slash Pine and Magnolia Wreath and Preserved Magnolia Wreath.

There may be a difference between ratings using the actual wreaths versus events where participants rated wreaths using pictures. Wreath designs could have been homogenous, for example, using only foliage, for more effective statistical analyses. Using preserved magnolia complicates the production process as do varying forms

of attachment with the row-crop materials. The study could have been limited to one type of mechanic (clamp machine).

Participants may have been confused by wreath material variations. For example, some seemed suitable for fall, while others may have been perceived as being appropriate only for Christmas. Some were perhaps versatile, for multiple seasonal displays.

Preserved Magnolia Wreath should have exhibited more value from the participants because it can remain beautiful and usable for many years, but participants may not have perceived this by observation alone. Its overall color is leather brown, and this may have caused people to see it as dead or drab. Could a descriptional tag or packaging increase this wreath's perceived value? Magnolia is valued in the South, particularly in Mississippi, due to its recognition as the state's official flower and official tree.

Value of the Willow Wreath was at the lower end, despite its having the most significant size measurement. Its design is open, with more negative space than the other, visually heavier wreaths and may have more of a decorator appearance than the others, appearing more useful on a blank wall than on a front door. Was it perceived as fragile, not able to stand to weathering or mechanical breakage? Its design required the use of a plant material not found in as great abundance as the materials used in other wreaths.

Producers may be surprised to learn the wholesale values of wreath contents. The plant material bunches cost just under $10 from commercial wholesalers. Thus, raw materials already growing on Mississippi farms have high economic value. If wreaths are constructed using purchased plant materials, they will cost well above the consumers' willingness to pay prices.

The results of this study indicate that wreath or floral designs opportunities exist for local horticulture growers. Many farmers seek alternative crops and value-added products, particularly during the off-season. Value-added products can be manufactured and marketed from farms already producing these materials. Magnolia and Pinus are native plants and are abundant on farms.

Results of the survey also suggest more research and Extension programming with the local horticulture industry could be beneficial. Producers seeking alternative crops can be informed about cut ornamental floral materials and their uses. Further, producers should find lucrative markets for value-added floral products before production but will need to consider design prototypes, design, construction, and packaging.

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APPENDIX A. RECRUITMENT MATERIALS

Survey of Consumer Preferences of Wreath Designs

Hello. My name is Dr. Jim DelPrince, and I am a Horticulture Extension Specialist with Mississippi State University. I am in the process of recruiting participants of the Fall Flower & Garden Fest for a survey to determine consumer preferences for wreath designs. May I tell you more about this?

If no
Thank you for your time.

If yes
Extension Floral Design programming at MSU Coastal wants to help florists succeed in promoting the locally produced wreaths using local materials. Would you be able to participate in the survey at any time on October 14 or 15, 2016, between the hours of 9:00 a.m. and 2:00 p.m.?

Your responses to the questions will be kept anonymous and will be published only in summary form. This survey is voluntary, and you do not have to answer any of the questions if you choose. The purpose of the study is to develop an educational program to aid professional florists in discovering local markets for different wreath designs.

APPENDIX B. QUESTIONNAIRE

Survey of Consumer Preferences of Wreath Designs

To better understand the markets for wreath designs by local florists, We would like to invite you to complete this survey. The information you provide will allow MSU Coastal Research and Extension Center to learn more about various market segments of potential buyers of locally-made wreaths.

This survey is completely voluntary and will take approximately 5-10 minutes to complete. You do not have to answer all of the questions. Your responses will be anonymous, and identification such as your name or email address will not be collected. Your name will never be connected with your answers. Your privacy will be carefully protected, and your answers will be combined with those of the other people who are participating in this project. If you choose not to participate, you will not be penalized.

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By completing this survey, you agree to the contents of the CONSENT FORM.

Please look at the wreaths on display, identified by a letter on each design. For each design, please circle the number which indicates how much you personally like it. A response of -1- would indicate that you strongly dislike it or a -7- would indicate that you strongly like it. A rating of -4- means you neither strongly like nor strongly dislike the plant. Please state how much you are willing to pay for these wreath designs for your home or to give as gift?

Design	Strongly do NOT LIKE this design			Neither like nor dislike	Strongly LIKE this design			How much are you willing to pay for this design? ($/wreath)
A	1	2	3	4	5	6	7	
B	1	2	3	4	5	6	7	
C	1	2	3	4	5	6	7	
D	1	2	3	4	5	6	7	
E	1	2	3	4	5	6	7	
F	1	2	3	4	5	6	7	

We would like to have some additional information about yourself. Your responses are anonymous and are very helpful to us when interpreting results.

How many wreaths did you buy last year (2015) for your home and to give as gifts? _____ wreaths (NO#)

In what year were you born? _____ (YRBORN)

Are you _____ 1 male _____ 0 female? (GENDER)

How many years of formal education have you completed? (ex., 12 years = High School Graduate)
_____ years (YREDUC)

Counting yourself, how many people live in your household? _____ persons (HHSIZE)

What is your approximate household income last year (2015 before taxes? (INCOME)

_____ 1 less than $25,000
_____ 2 $25,000 to $50,000
_____ 3 $50,001 to $75,000
_____ 4 $75,001 to $100,000
_____ 5 $100,001 to $150,000
_____ 6 $150,001 to $200,000
_____ 7 $200,001 to $250,000
_____ 8 more than $250,000
_____ No answer
_____ 9 No income

Please indicate your race: (RACE)

_____ 1 Native American
_____ 2 Caucasian
_____ 3 African American
_____ 4 Hispanic
_____ 5 Asian or Pacific Islander
_____ 6 Other, please specify _____

THANK YOU FOR YOUR TIME

PLACE COMPLETED SURVEY IN CLOSED BOX.

APPENDIX C

Appendix C. Description and total costs of materials.

Code	Name of design	Materials	Material costs ($)
A	Corkscrew Willow Wreath	Willow - 6 bunches @ 7.50	
		Machine -	
		Form - 0.95	45.95
B	Preserved Magnolia Wreath	Foliage - 5 bunches @ 8.50	
		Glycol - 25/gal shipped;	
		Machine -	
		Form - 0.95	44.45
C	Fresh Magnolia Wreath	Foliage - 5 bunches @ 8.50	
		Machine -	
		Form - 0.95	43.45
D	Slash Pine and Magnolia Wreath	Foliage - 5 bunches @ 8.50	
		Machine -	
		Form - 0.95	43.45
E	Mixed Row Crop Wreath	3 Okra - 9.50	
		3 mini pump - 3.00	
		10 cotton - 8.50	
		8 milo - 8.50 (guess)	
		3 corn - 3.00	
		Machine -	
		Form - 0.95	
		Pan -	
		Glue -	
		Paper cov wire - 0.50 (9.99 skein)	34.45
F	Pine Cone Wreath	Cones - 122.64 (1.33 each)	
		Form - 12.31	
		Paper cov wire - 5.00 (9.99 skein)	139.95

SOURCES OF MATERIALS

Paper-Covered Wire (2/13/19)

https://www.wholesalefloral.com/ProductDetails.asp?ProductCode=P-SM2641&gclid=Cj0KCQiAnY_jBRDdARIsAIEqpJ2uMoshuH383ala6oZRg7bbAcP7_bLacj5WqxNw5FYgNrkIYS_MfAUaAkjwEALw_wcB

Pine Cones (2/13/19)

https://www.afloral.com/products/medium-cones-bag-of-25?utm_source=google&utm_medium=cpc&adpos=1o3&scid=scplpKNU-41800880&sc_intid=KNU-41800880&gclid=Cj0KCQiAnY_jBRDdARIsAIEqpJ2hjexuGxwkak8jANF0nQbYlWzhGZC-JAmsai32w672Dd4aYwIBIhQaAqRHEALw_wcB

Wire Wreath Frame (18 Inch)

https://www.amazon.com/World-Craft-FBA_36006-Wreath-Frame-18/dp/B0018N47TS

Clamping Wreath Machine and Table

https://sheerlundproducts.com/christmas/wreath-making-supplies/wreath-clamp-machine-and-table/

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