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).
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):

\[ \text{LOL} = \beta_0 + \beta_1 \times \text{WD} + \beta_2 \times \text{PP} + \beta_3 \times \text{LT} + \beta_4 \times \text{SEC} + \epsilon \]  

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>
<thead>
<tr>
<th>Location and type of survey</th>
<th>Number of respondents</th>
<th>Percent of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oct. 2016 — Fall Flower and Garden Fest, Crystal Springs, MS</td>
<td>223</td>
<td>64.27</td>
</tr>
<tr>
<td>Sept. 2017 — Mississippi Homemaker Volunteers, Biloxi, MS</td>
<td>34</td>
<td>9.86</td>
</tr>
<tr>
<td>Oct. 2017 — Beautiful Things for Mississippi, Biloxi, MS</td>
<td>40</td>
<td>11.53</td>
</tr>
<tr>
<td>Oct. 2017 — Ornamental Horticulture Field Day, Poplarville, MS</td>
<td>40</td>
<td>11.53</td>
</tr>
<tr>
<td>Oct. 2017 — Online Survey at SurveyMonkey.com</td>
<td>347</td>
<td>100.00</td>
</tr>
</tbody>
</table>
Table 2. Basic descriptions of the wreath designs.

<table>
<thead>
<tr>
<th>Code</th>
<th>Name of design</th>
<th>Outside diameter</th>
<th>Inside diameter</th>
<th>Construction time</th>
<th>Weight</th>
<th>Materials cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Corkscrew Willow Wreath</td>
<td>40 in (101.6 cm)</td>
<td>12 in (30.48 cm)</td>
<td>30 min</td>
<td>1.78 lb (0.80 kg)</td>
<td>$45.95</td>
</tr>
<tr>
<td>B</td>
<td>Preserved Magnolia Wreath</td>
<td>22 in (55.88 cm)</td>
<td>8 in (20.32 cm)</td>
<td>30 min</td>
<td>1.83 lb (0.83 kg)</td>
<td>$44.45</td>
</tr>
<tr>
<td>C</td>
<td>Fresh Magnolia Wreath</td>
<td>24 in (60.96 cm)</td>
<td>6 in (15.24 cm)</td>
<td>30 min</td>
<td>3.01 lb (1.38 kg)</td>
<td>$43.45</td>
</tr>
<tr>
<td>D</td>
<td>Slash Pine and Magnolia Wreath</td>
<td>26 in (66.04 cm)</td>
<td>8 in (20.32 cm)</td>
<td>30 min</td>
<td>3.17 lb (1.53 kg)</td>
<td>$43.45</td>
</tr>
<tr>
<td>E</td>
<td>Mixed Row Crop Wreath</td>
<td>25 in (63.50 cm)</td>
<td>6 in (15.24 cm)</td>
<td>60 min</td>
<td>7.17 lb (3.25 kg)</td>
<td>$34.45</td>
</tr>
<tr>
<td>F</td>
<td>Pine Cone Wreath</td>
<td>22 in (55.88 cm)</td>
<td>8 in (20.32 cm)</td>
<td>70 min</td>
<td>4.62 lb (2.10 kg)</td>
<td>$139.95</td>
</tr>
</tbody>
</table>

- $\beta_1$ = 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 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):

$$WTP = \beta_1 + \beta_2 \times WD + \beta_3 \times PP + \beta_4 \times LT + \beta_5 \times SE + \epsilon$$ 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).
DESIGNERS 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

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**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).

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>
<thead>
<tr>
<th>Characteristics</th>
<th>Number</th>
<th>Deviation/Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average age of respondent (yr)</td>
<td>60.88</td>
<td>14.83</td>
</tr>
<tr>
<td>Average formal education of respondent (yr)</td>
<td>14.26</td>
<td>4.10</td>
</tr>
<tr>
<td>Average household size</td>
<td>2.34</td>
<td>1.31</td>
</tr>
<tr>
<td>Average number of wreaths bought last year</td>
<td>1.21</td>
<td>1.85</td>
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<tr>
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<td></td>
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<tr>
<td>Female respondents</td>
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<tr>
<td>Male respondents</td>
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<td>No answer</td>
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<td>7.83</td>
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<td>Respondents distribution by household income:</td>
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<td>$25,000 to $50,000</td>
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<td>More than $250,000</td>
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<td>African American</td>
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<tr>
<td>Hispanic</td>
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<td>0.30</td>
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<tr>
<td>Asian or Pacific Islander</td>
<td>38</td>
<td>11.38</td>
</tr>
<tr>
<td>Others</td>
<td>2.10</td>
<td></td>
</tr>
</tbody>
</table>

*** — statistically significant at 0.001 concerning the location and type of survey.
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).
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>
<thead>
<tr>
<th>Independent variable</th>
<th>Coefficient</th>
<th>Standard error</th>
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<tbody>
<tr>
<td>Wreath designs:</td>
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<tr>
<td>Corkscrew Willow Wreath *</td>
<td>0.192</td>
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<tr>
<td>Preserved Magnolia Wreath **</td>
<td>1.097</td>
<td>0.195</td>
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<tr>
<td>Fresh Magnolia Wreath ***</td>
<td>0.884</td>
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<tr>
<td>Slash Pine and Magnolia Wreath</td>
<td>1.004</td>
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<tr>
<td>Mixed Row Crop Wreath</td>
<td>1.515</td>
<td>0.160</td>
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<tr>
<td>Pine Cone Wreath</td>
<td>0.042</td>
<td>0.028</td>
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<td>Previous wreath purchases **</td>
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<tr>
<td>Location and type of survey:</td>
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<td>Oct. 2016 — Fall Flower and Garden Fest. *</td>
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<tr>
<td>Sept. 2017 — Mississippi Home Volunteers **</td>
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<td>Oct. 2017 — Beautiful Things for Mississippi ***</td>
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<td>Oct. 2017 — Ornamental Horticulture Field Day</td>
<td>0.412</td>
<td>0.193</td>
</tr>
<tr>
<td>Feb. 2017 — Producer Advisory Council Meeting</td>
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<td>0.130</td>
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<td>Wald chi-squared</td>
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</tr>
<tr>
<td>Pseudo R-squared</td>
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<td></td>
</tr>
</tbody>
</table>

* , ** , *** — statistically significant at 0.001, 0.01, 0.05.
ns — not statistically significant at 0.05.
a — set as the base variable.
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 to other races. Marginal LOL of Caucasian respondents is considerably less than zero (Table 4).

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

**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.**
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.

<table>
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<tr>
<th>Independent variable</th>
<th>Coefficient</th>
<th>Standard error</th>
</tr>
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<tbody>
<tr>
<td>Wreath designs:</td>
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<tr>
<td>Corkscrew Willow Wreath *</td>
<td>3.527</td>
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<td>Preserved Magnolia Wreath **</td>
<td>9.701</td>
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<td>Fresh Magnolia Wreath</td>
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<td>Pine Cone Wreath</td>
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<td>Previous wreath purchases **</td>
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<td>0.333</td>
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<td></td>
</tr>
<tr>
<td>Oct. 2016 — Fall Flower and Garden Fest *</td>
<td>0.038</td>
<td>4.534</td>
</tr>
<tr>
<td>Sep. 2017 — Mississippi Home Volunteers **</td>
<td>-0.410</td>
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</tr>
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<td>Oct. 2017 — Beautiful Things for Mississippi **</td>
<td>1.325</td>
<td>2.783</td>
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<td>Feb. 2017 — Producer Advisory Council Meeting **</td>
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<tr>
<td>R-squared</td>
<td>0.192</td>
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</tr>
</tbody>
</table>

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


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.

James M. DelPrince, PhD, AIFD, PFCI
Assistant Professor, Horticulture Specialist
MSU Coastal Research and Extension Center
1815 Popps Ferry Road
Biloxi, Mississippi 39532
Phone: (228) 546-1011
Email: JDelPrince@pss.msstate.edu

BENEDICT POSADAS, Ph.D.
Associate Extension Research Professor of Economics
Mississippi State University, Coastal Research and Extension Center
1815 Popps Ferry Road, Biloxi, MS 39532
Phone: 228-546-1024
Email: ben.posadas@msstate.edu

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?
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? _______ (YR>BORN)

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
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.

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

**Paper-Covered Wire (2/13/19)**  
[https://www.wholesalefloral.com/ProductDetails.asp?ProductCode=P-SM2641&gclid=Cj0KCQiAnY_jBRDdARltsAlEgpJ2uMoshuH383ala6oZRg7b9AcP7_bLaCj5WxpNw5FYgNrkYs_MfAaAkjwEALw_wcB](https://www.wholesalefloral.com/ProductDetails.asp?ProductCode=P-SM2641&gclid=Cj0KCQiAnY_jBRDdARltsAlEgpJ2uMoshuH383ala6oZRg7b9AcP7_bLaCj5WxpNw5FYgNrkYs_MfAaAkjwEALw_wcB)

**Pine Cones (2/13/19)**  
[https://www.afloral.com/products/medium-cones-bag-of-257utm_source=google&utm_medium=cpc&adpos=1o3&scid=scplpKNU-41800880&sc_intid=KNU-41800880&gclid=Cj0KCQiAnY_jBRDdARltsAlEgpJ2hjexuGxwakak8jANF0nQbYWzhGZC-JAmsai32v67Zg4aYwBl-hQaAqRHwALw_wcB](https://www.afloral.com/products/medium-cones-bag-of-257utm_source=google&utm_medium=cpc&adpos=1o3&scid=scplpKNU-41800880&sc_intid=KNU-41800880&gclid=Cj0KCQiAnY_jBRDdARltsAlEgpJ2hjexuGxwakak8jANF0nQbYWzhGZC-JAmsai32v67Zg4aYwBl-hQaAqRHwALw_wcB)

**Wire Wreath Frame (18 Inch)**  

**Clamping Wreath Machine and Table**  
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