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**Working Paper**

## Honey Industry Survey: An Update

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CORNELL  
AGRICULTURAL ECONOMICS  
STAFF PAPER

HONEY INDUSTRY SURVEY:  
An Update

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# HONEY INDUSTRY SURVEY:

## An Update\*

### INTRODUCTION

The U.S. honey industry is undergoing a period of rapid change. The industry has concern about the possible effects of the infiltration of Africanized honey bees into the United States and what those bees might mean for honey production and providing pollination services. The discovery of varroa mites has heightened the industry's awareness of the potential effects of spreading bee diseases and parasites on the migratory behavior of beekeepers and the package bee and queen bee industry. There is continuing concern about the influence of pesticides on bees as they forage for food and pollinate crops. The effects of changing the federal honey price support program has industry participants anxious about the ability to maintain a positive cash flow in the future. The industry has provided financial support to the National Honey Board, which has taken a role in promoting the use of honey in domestic and export markets. Finally, honey producers, packers, importers and brokers want to insure that all consumers receive a high quality product that is void of chemical alteration or pesticide residues.

To assist in identifying these issues and other issues that are of concern to the U.S. honey industry a national survey of the industry was recommended. This survey, funded by the National Honey Board and the U.S. Department of Agriculture is conducted by the Department of Agricultural Economics at Cornell University. The purpose of the honey industry survey is to collect information to identify the needs and current economic status of the honey industry. Information from this study will be provided by the Economic Research Service of the U.S. Department of Agriculture to members of the U.S. Congress

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to assist them in establishing a pricing policy that reflects the needs of the industry. In addition, this information will aid the National Honey Board's development of research, advertising and promotion programs which will best serve the industry.

In this report the honey industry survey instrument and survey sample will be discussed. The response rate of the survey, mailed in January 1990 will be reported. Some initial results of the survey will be reported. In particular, responses of producers with regard to size, receipts and some financial characteristics will be reported. A complete analysis of the survey responses will be available in late 1991.

## SURVEY INSTRUMENT

The survey instrument consists of a cover letter, a questionnaire, a return envelope and an outer envelope. The cover letter, on Cornell University letterhead, invites the addressee to be part of a pioneering research effort that may result in better support and policies for the honey industry. Support for the survey by organizations associated with the honey industry is indicated in the letter's text as well as by signatures from Dan W. Hall (National Honey Board), Frederic Hoff (U.S. Department of Agriculture), Richard Adey (American Honey Producers Association, Inc.), Reg Willbanks (American Beekeeping Federation), Robert Appel (National Honey Packers & Dealers Association) and Lois Schertz Willett (Cornell University). In the letter, the respondents are assured that their responses will remain confidential and will never be associated with their name or company. The respondents are encouraged to participate in the study because it is only by their responses that an accurate evaluation of the importance of the beekeeping and honey industry to the nation and the needs and status of the honey industry can be made known.

The questionnaire itself consists of a cover sheet, twenty-one pages of questions, two pages with brief directions, a comments page and a page where the respondents are thanked for their cooperation. A picture of a large jar of honey, the title and purpose of the survey are identified on the front cover. Inside the front cover more detailed information

about the survey and information required by and provided by the Office of Management and Budget are included.

The survey questions consist of five parts. The first section asks producers about their firm characteristics, products and services, colony losses and advertising and promotional activities. Honey packers are asked to respond to questions dealing with firm characteristics, products and services and marketing activities in the second section. The third section includes similar questions for importers and brokers. Questions in the fourth part of the survey pertain to total gross expenses and the operation's financial situation. Finally, demographic information is collected in the last section.

The cover letter, questionnaire and a white self-addressed return envelope (with \$0.85 postage affixed) are mailed in a white envelope (with \$1.05 postage affixed) to those in the sample.

## PRETEST

To assist in identifying problems that could arise with the survey instrument, it was reviewed by several members of the industry and approved by the Office of Management and Budget. In addition, a pretest mailing to 200 participants in the industry was conducted in mid-August 1989. This mailing consisted of the complete survey instrument (cover letter, survey, return envelope and outer envelope). Contacts were selected such that the representation of each assessment category in the pretest was similar to the population representation. The initial mailing of the pretest was not followed by a postcard mailing to nonrespondents nor a second wave mailing of a cover letter, survey and return envelope. Seven weeks after the initial mailing, fifty-one surveys had been returned. This response represents twenty-five and one half (25.5) percent of the mailing. Four of these surveys were returned because of incorrect addresses. One of the forty-seven surveys was returned blank because the respondent would not release information he felt was

confidential. One of the forty-seven surveys was returned blank because the operator was no longer in the honey business. The remaining surveys were completed.

A response rate of 25.5 percent is somewhat lower than hoped for. There are a few characteristics of the pretest that must be taken into consideration when evaluating the response rate. First, the pretest was mailed in mid-August. This time of year is quite busy for honey producers and packers. Because of the competing demands on producers' and packers' time it is not unusual to get a lower response rate than anticipated.

Second, the response rate to the pretest is low because there was no follow-up to the initial mailing. A postcard was not mailed to nonrespondents two weeks after the initial mailing and a follow-up cover letter and additional survey was not mailed to nonrespondents two weeks following the postcard mailing. Studies have shown that additional contacts increase the response rate.

Third, there might be some concern that the length of the survey contributed to the low response rate. The respondents indicated it took them an average of 30 minutes to 45 minutes to complete the questionnaire. Several respondents completed the questionnaire in less than 30 minutes. One respondent worked on the questionnaire for over two hours. These averages are much lower than estimated by the Office of Management and Budget.

In order to determine why the survey had not been returned and if there was concern about the length of the survey, forty-two names were selected randomly from the list of nonrespondents and were contacted by telephone. Of the forty-two attempts at telephone contacts, fifteen individuals were not contacted because of unlisted phone numbers, unidentifiable names or lack of directory assistance due to a telephone strike occurring at the time. Of the twenty-seven that were contacted, five did not remember receiving the survey while twenty-two did recall receiving the survey but had not responded. The reasons for not responding ranged from an unwillingness to release confidential information to concern that parts of the survey did not apply to their operation. Four of those contacted indicated that they did not have the time to complete the survey

because it was a busy time of year for them. Only one of those four expressed concern that the survey was too long. Ten of those contacted said they were working on the survey and would return it when they could. Of course, their prompt response was encouraged.

### **SURVEY MAILING**

The survey was mailed in late January 1990 to 2,319 participants in the honey industry selected randomly from (1) the National Honey Board's mailing list of importers and brokers, packers and producers, (2) the National Honey Board's list of additional industry participants, and (3) a directory of honey handlers. Table 1 provides a breakdown of the participants included in the mailing.

A postcard mailing to all participants occurred in mid February 1990, two to three weeks after the initial mailing of the survey. This mailing encouraged response from those industry participants contacted in the first wave mailing. The postcard identified the importance of their participation and encouraged them to return the survey. A second cover letter, survey and return envelope was mailed to any nonrespondents in late February 1990, two weeks after the postcard mailing. Once again participation was encouraged. As requested by the Office of Management and Budget, a postcard mailing to all remaining non-respondents occurred in mid March 1990. This mailing encouraged response from those industry participants contacted in the previous mailings.

### **RESPONSE RATE**

Fifty-three percent of the surveys were not returned. As seen in Figure 1, about eight percent of the surveys were returned because the respondent was deceased or ineligible or the address was incorrect. Nearly six percent of the surveys were returned incomplete because the respondents indicated they were out of business or refused for other reasons. Of the 1079 surveys returned, 754 of them were completed. These returns



indicate a response rate of 32.5 percent. By deleting the ineligible, deceased and incorrect addresses, the effective response rate is 36.7 percent.

Table 1

**PARTICIPANTS IN HONEY INDUSTRY SURVEY BY SIZE CATEGORY**

	(#)	(% of Total)
<b>Producer</b>		
Assessments ≤ \$60	859	37.0
\$60 < Assessments ≤ \$218.50	355	15.3
\$218.50 < Assessments ≤ \$5,000	425	18.3
\$5,000 < Assessments ≤ \$10,000	14	0.6
\$10,000 < Assessments	<u>2</u>	<u>0.1</u>
<b>TOTAL</b>	<b>1655</b>	<b>71.3</b>
<b>Producer/Packers</b>		
Assessments ≤ \$100	96	4.1
\$100 < Assessments ≤ \$1,000	111	4.8
\$1,000 < Assessments	<u>43</u>	<u>1.9</u>
<b>TOTAL</b>	<b>250</b>	<b>10.8</b>
<b>Importers and Brokers</b>		
Importers	171	7.4
Brokers	<u>18</u>	<u>0.8</u>
<b>TOTAL</b>	<b>189</b>	<b>8.2</b>
<b>Additional Participants Contacted</b>		
Producers	57	2.4
Producer/Packers	18	0.8
Packer/Handlers	<u>120</u>	<u>5.2</u>
<b>TOTAL</b>	<b>195</b>	<b>8.4</b>
<b>Handler Supplement</b>	<b>30</b>	<b>1.3</b>
<b>GRAND TOTAL</b>	<b>2319</b>	<b>100.0</b>

Figure 1

# Response Rate

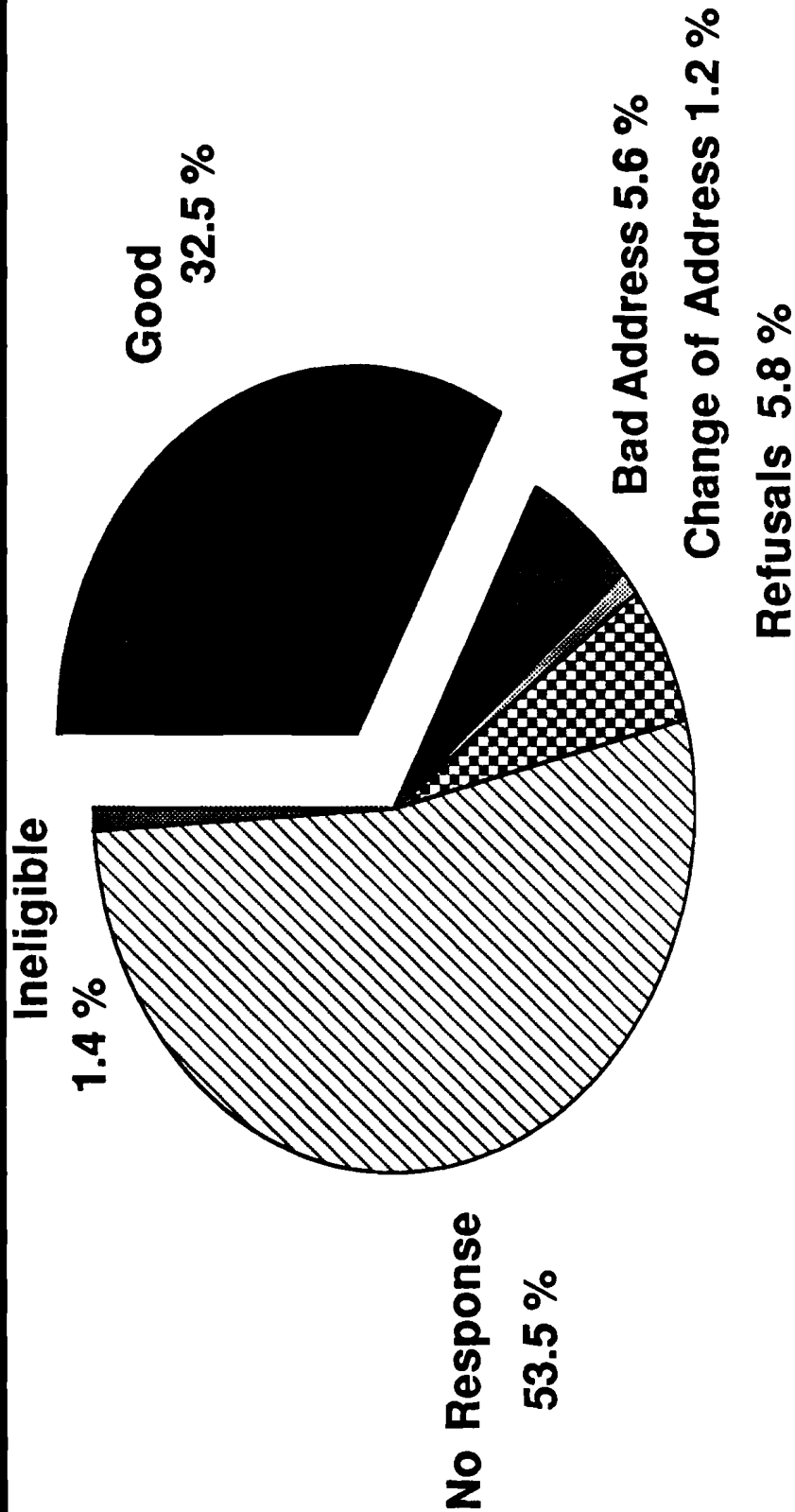


Figure 2 identifies the response rate by mailing category. It is apparent that the producers and the producer/packers had the highest response rate. This result could be attributed to the fact that these groups knew the survey was coming since the survey was discussed at their annual meetings in 1990. In addition the importers and brokers usually deal with several products, not just honey and honey related products. Hence, they might have perceived this questionnaire as a burden.

In the survey, respondents were asked to identify their profession. As seen in Figure 3, ninety-five percent of the respondents indicated they were producers. About 18 percent indicated they were packers. Only two percent identified themselves as importers and two percent identified themselves as brokers. The respondents were then asked to complete different parts of the questionnaire according to their profession.

Of the 688 respondents who identified themselves as producers, 42 percent of them are considered large or full-time producers, as seen in Figure 4. Forty-four percent of the producers are part-time and 14 percent of the producer respondents are hobbyists. Full-time producers are defined as those producers with 300 or more colonies. Part-time producers are defined as those producers with less than 300 colonies but more than 24 colonies. Hobby producers have less than 25 colonies. Producers were categorized according to their average colony number from 1985 through 1988. Since the purpose of the survey was to identify the current economic status of the industry it was important to have respondents from all size operations.

Results of the survey indicated that producers who responded produced about twenty percent of the nation's honey crop in each year. As seen in Table 2, there is a variation in the quantity of honey production reported in the survey. However, this honey production is nearly 20 percent of the U.S.'s total honey product for the year 1985-1988.

**Table 2**

# **Production of Respondents**

<b>Million Pounds</b>	<b>1985</b>	<b>1986</b>	<b>1987</b>	<b>1988</b>
<b>Survey</b>	<b>26.0</b>	<b>35.5</b>	<b>45.4</b>	<b>39.7</b>
<b>US Domestic</b>	<b>150.1</b>	<b>200.4</b>	<b>226.8</b>	<b>211.5</b>
<b>Survey % of US</b>	<b>17 %</b>	<b>18 %</b>	<b>20 %</b>	<b>19 %</b>

**Figure 4**

# Profession of Respondents

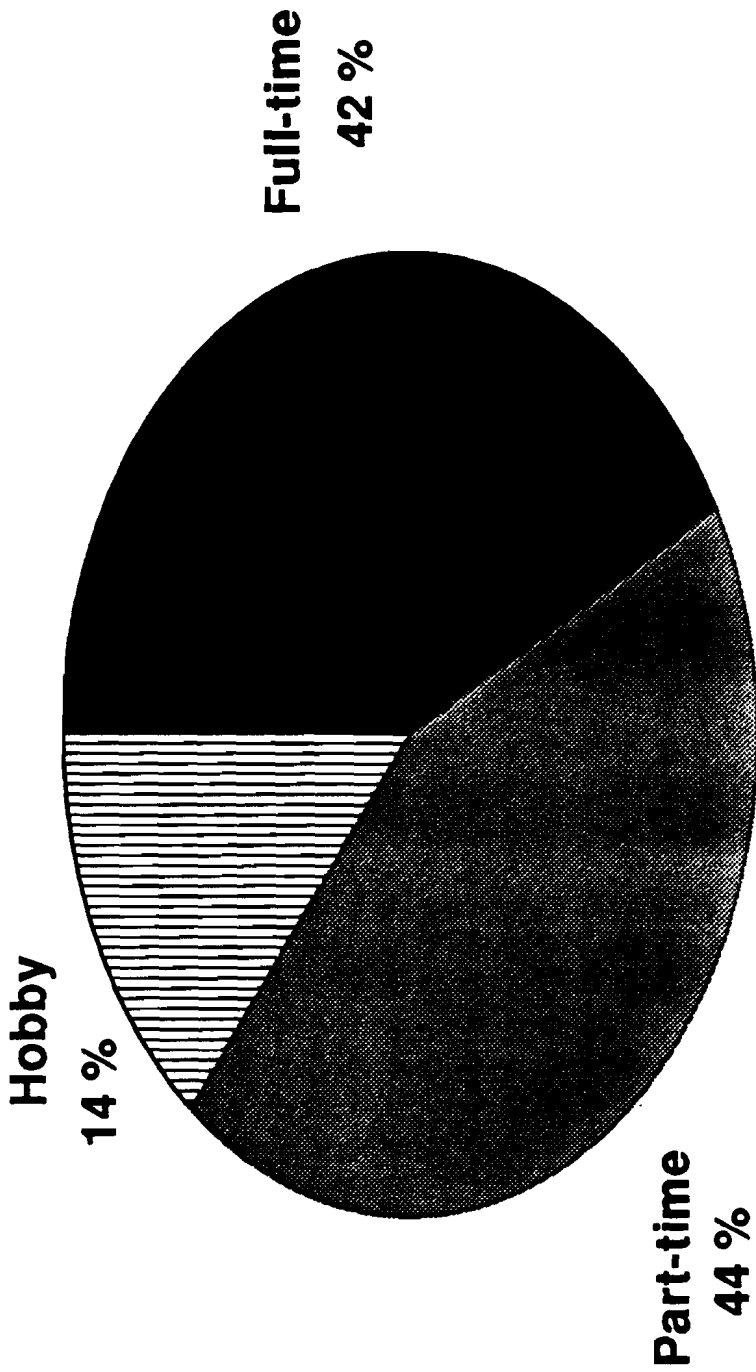


Figure 2

# Response Rate by Mailing Category

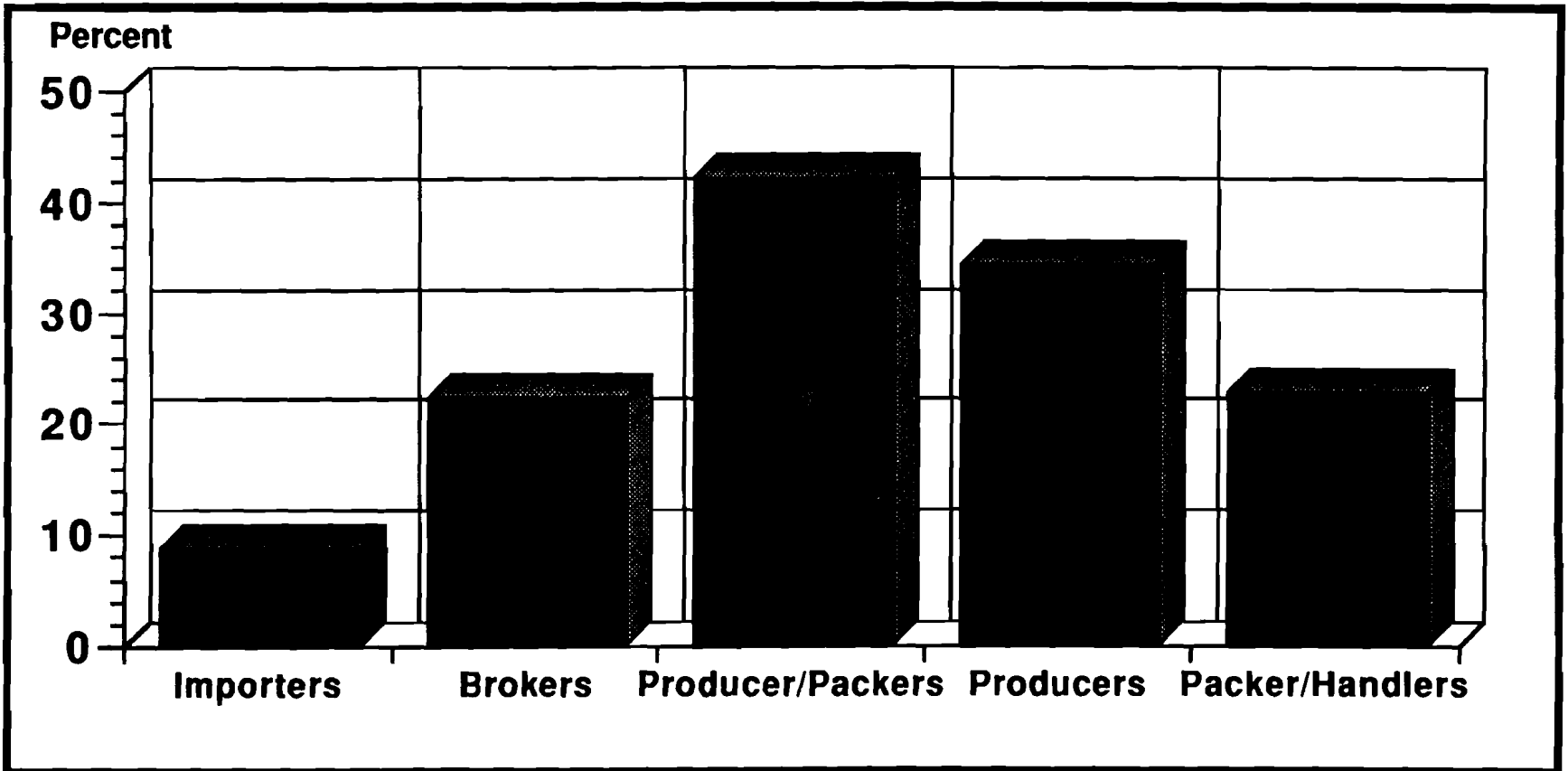
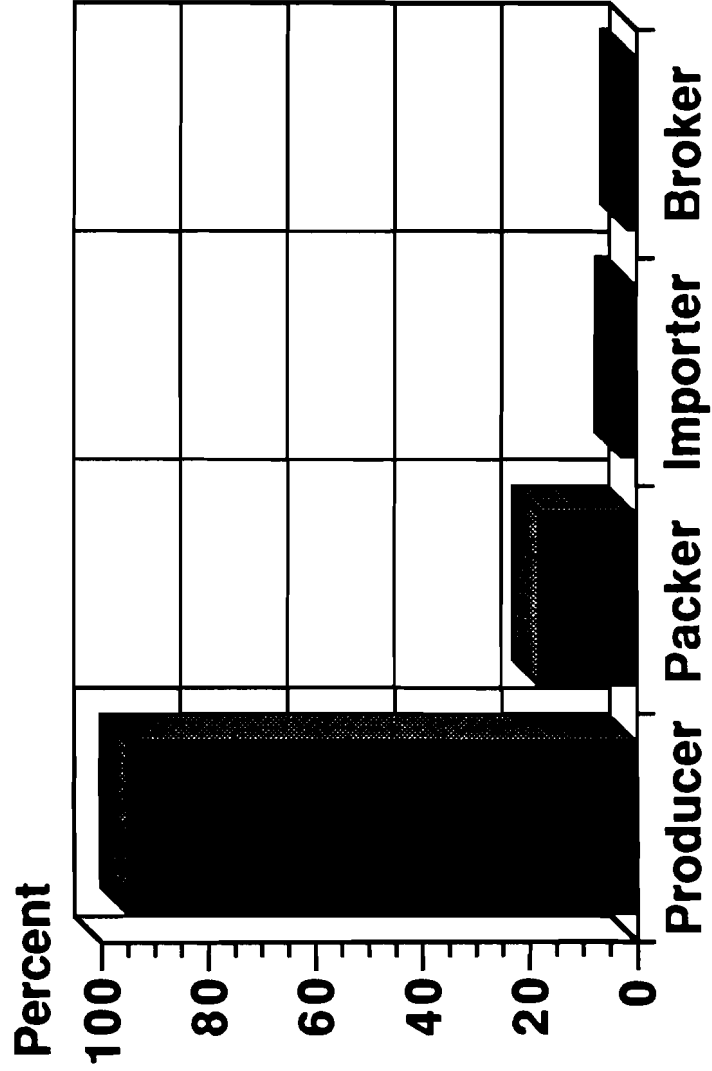


Figure 3

# Response Rate by Profession



The respondents to the survey are from across the United States as seen in Figure 5. California, Michigan, Florida, Wisconsin, Texas, Minnesota, Ohio, South Dakota and Iowa each had between 30 and 50 respondents. Only nine percent of the respondents come from the Northeast while thirty-six percent are from the Midwest.

### SIZE OF OPERATIONS

As indicated earlier in Figure 4, the producers were identified as full-time, part-time or hobby producers according to their size of operation. As identified in Table 3, the average size of each type of producer increased from 1985 through 1988. The average number of colonies of full-time producers increased over 7 percent. The average number of colonies of part-time producers increased nearly 20 percent. Hobby beekeepers' colony numbers increased over 33 percent. Table 4 indicates there was an increase in the average size of all operations from 1985 through 1988. This increase in the size of beekeeping operations is consistent with the increasing size of all agricultural operations.

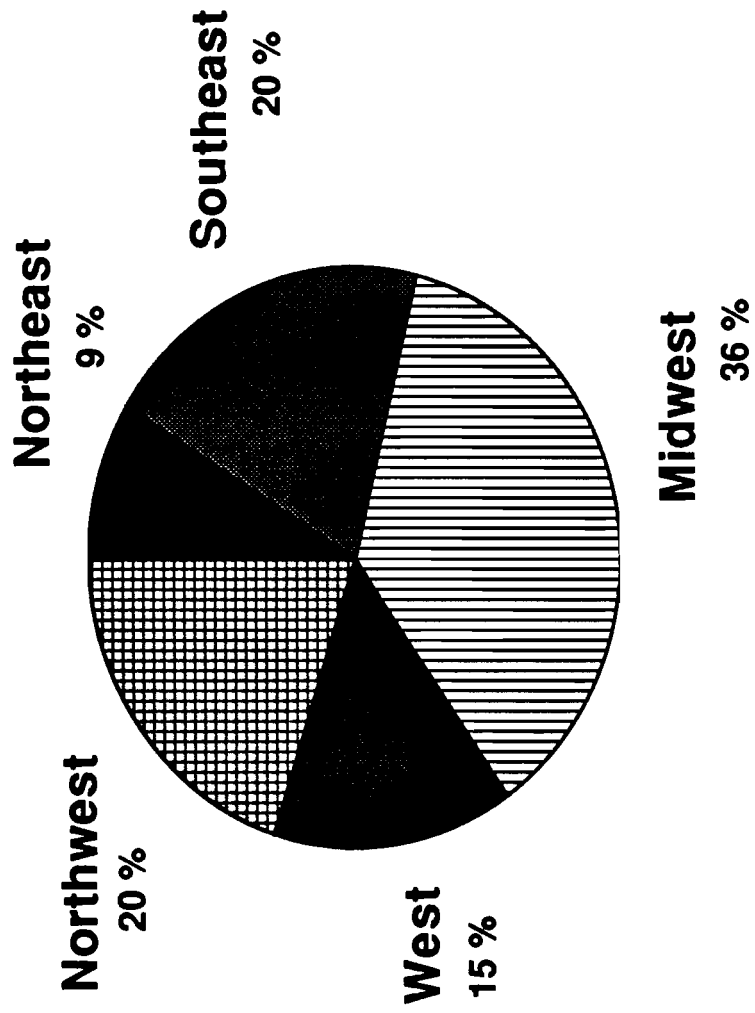
### PRODUCER RECEIPTS

Table 5 presents the share of revenue producers receive from each product by operation size. Note that full-time producers receive over half of their revenue from honey sales and another 26 percent from the government programs. Hobby producers receive over half of their revenue from honey sales and 44 percent of their revenues from government programs. Full-time beekeepers revenue is primarily from honey (77 percent). However, full-time beekeepers may also receive income from products and services other than honey. Over 20 percent is from sources such as pollination, beeswax, etc.



**Figure 5**

# Region of Respondents



**Table 3**

# **Number of Colonies by Profession**

	<b>1985</b>	<b>1986</b>	<b>1987</b>	<b>1988</b>
<b>Full-time</b>	<b>1575</b>	<b>1599</b>	<b>1661</b>	<b>1690</b>
<b>Part-time</b>	<b>117</b>	<b>118</b>	<b>127</b>	<b>140</b>
<b>Hobby</b>	<b>11</b>	<b>12</b>	<b>14</b>	<b>15</b>

**Table 4**

# **Number of Colonies, 1985-88**

	<b>Average</b>	<b>Range</b>
<b>1985</b>	<b>749</b>	<b>2 - 27,367</b>
<b>1986</b>	<b>748</b>	<b>2 - 26,706</b>
<b>1987</b>	<b>768</b>	<b>1 - 28,503</b>
<b>1988</b>	<b>783</b>	<b>2 - 29,640</b>

**Table 5**

# Average Receipts, 1988

	Honey	Pollination Services	Beeswax	Packages, Queens & Nucs	Government Programs	Other
Full-time	51	13	2	3	26	5
Part-time	60	7	1	1	28	3
Hobby	54	0	1	0	44	1

**Figures = percent of total**

Figure 6

# Sources of Average Receipts of Full-time Producers

19

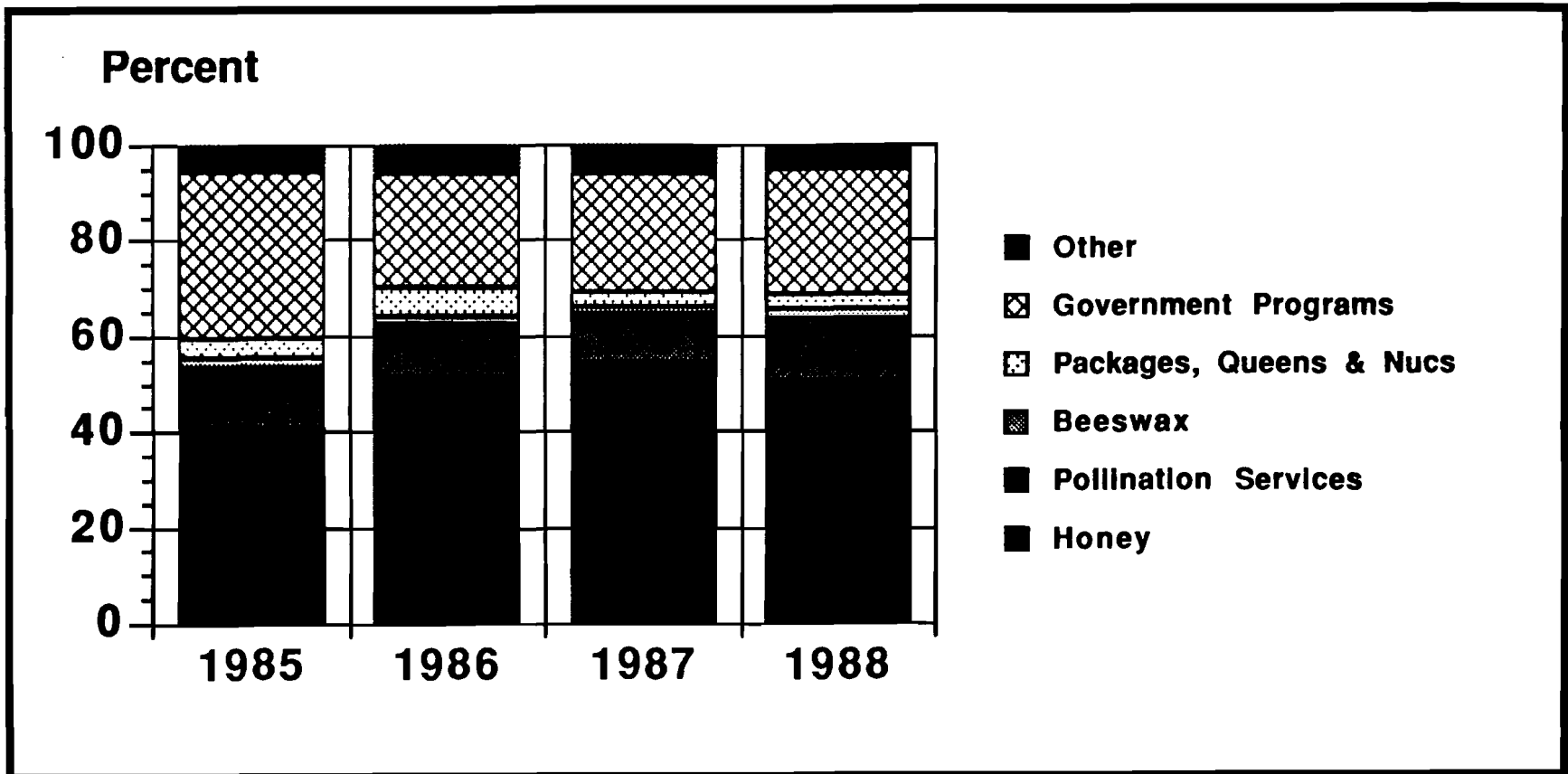


Figure 7

# Sources of Average Receipts of Part-time Producers

Percent

100

80

60

40

20

0

1985

1986

1987

1988

- Other
- ⊠ Government Programs
- ▣ Packages, Queens & Nucs
- ▤ Beeswax
- Pollination Services
- Honey

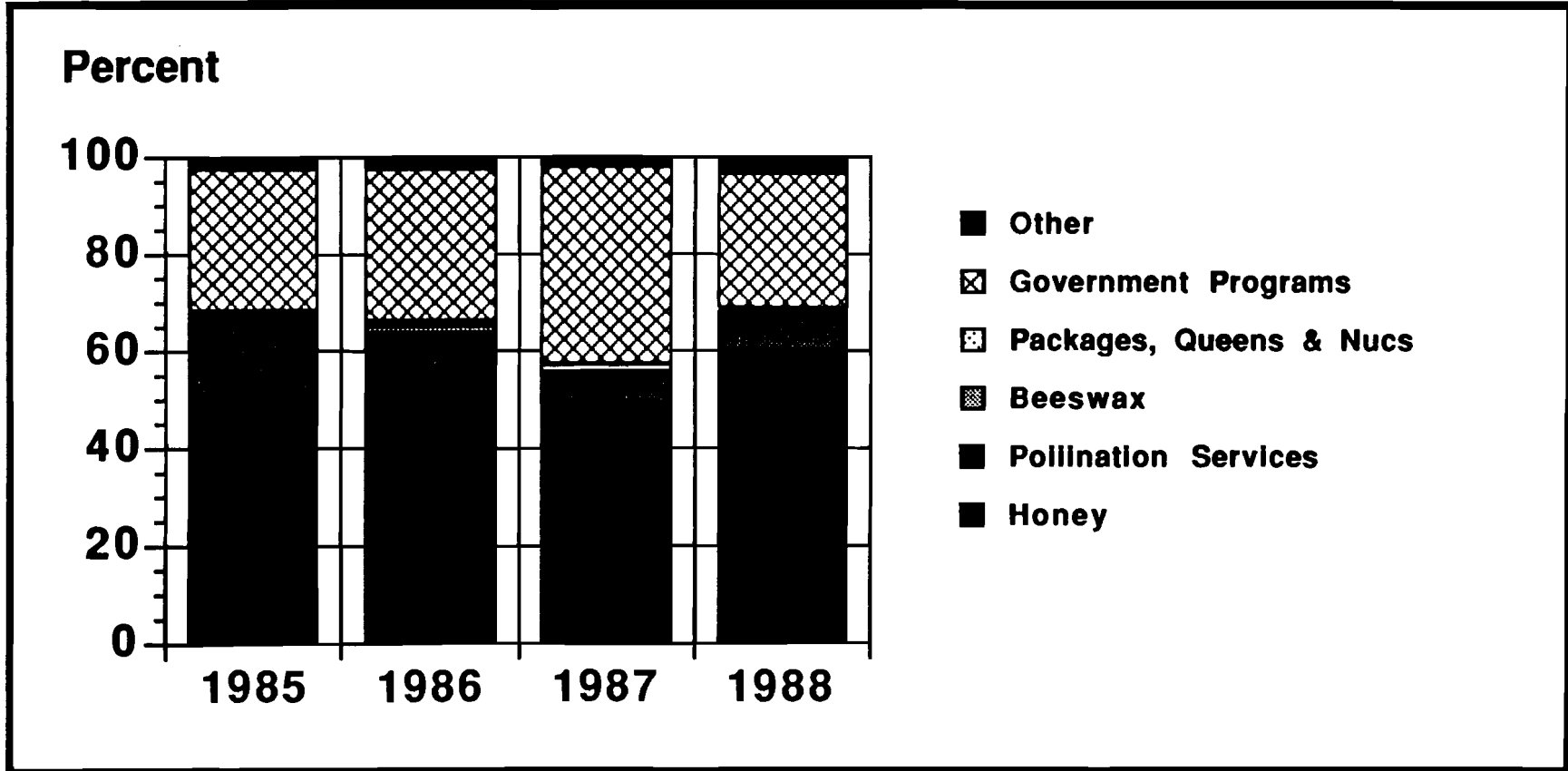
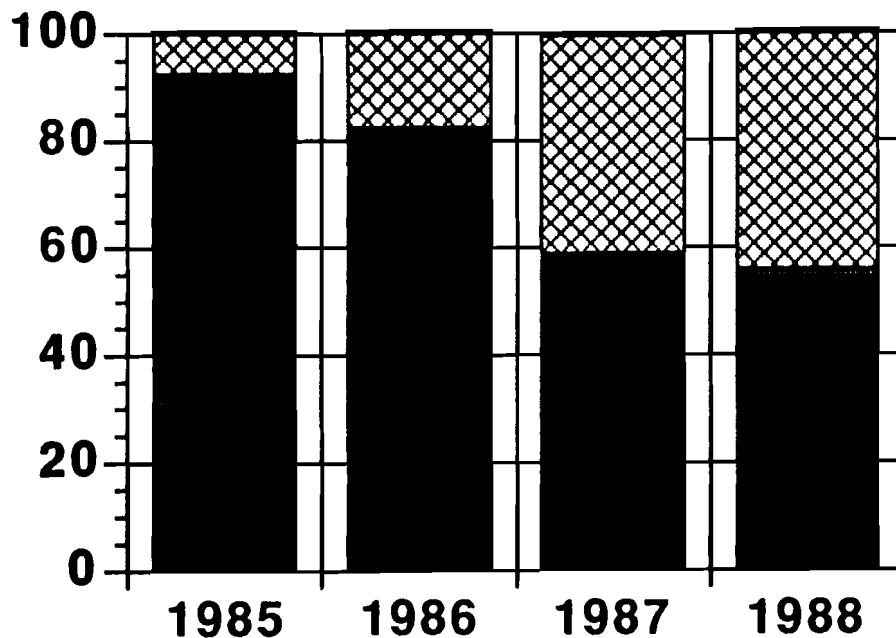


Figure 8

# Sources of Average Receipts of Hobby Producers

Percent



**Table 6**

# Average Price for Beekeeping Products, 1988

	<b>Honey</b>	<b>Government Programs</b>	<b>Pollination Services</b>	<b>Beeswax</b>	<b>Package Bees</b>	<b>Queens &amp; Nucs</b>
	<b>\$/pound</b>	<b>\$/pound</b>	<b>\$/colony</b>	<b>\$/pound</b>	<b>\$/pound</b>	<b>\$/number</b>
<b>Full-time</b>	.41	.22	30.90	.79	10.45	6.70
<b>Part-time</b>	.51	.24	18.21	.31		3.88
<b>Hobby</b>	.35	.28		.56		



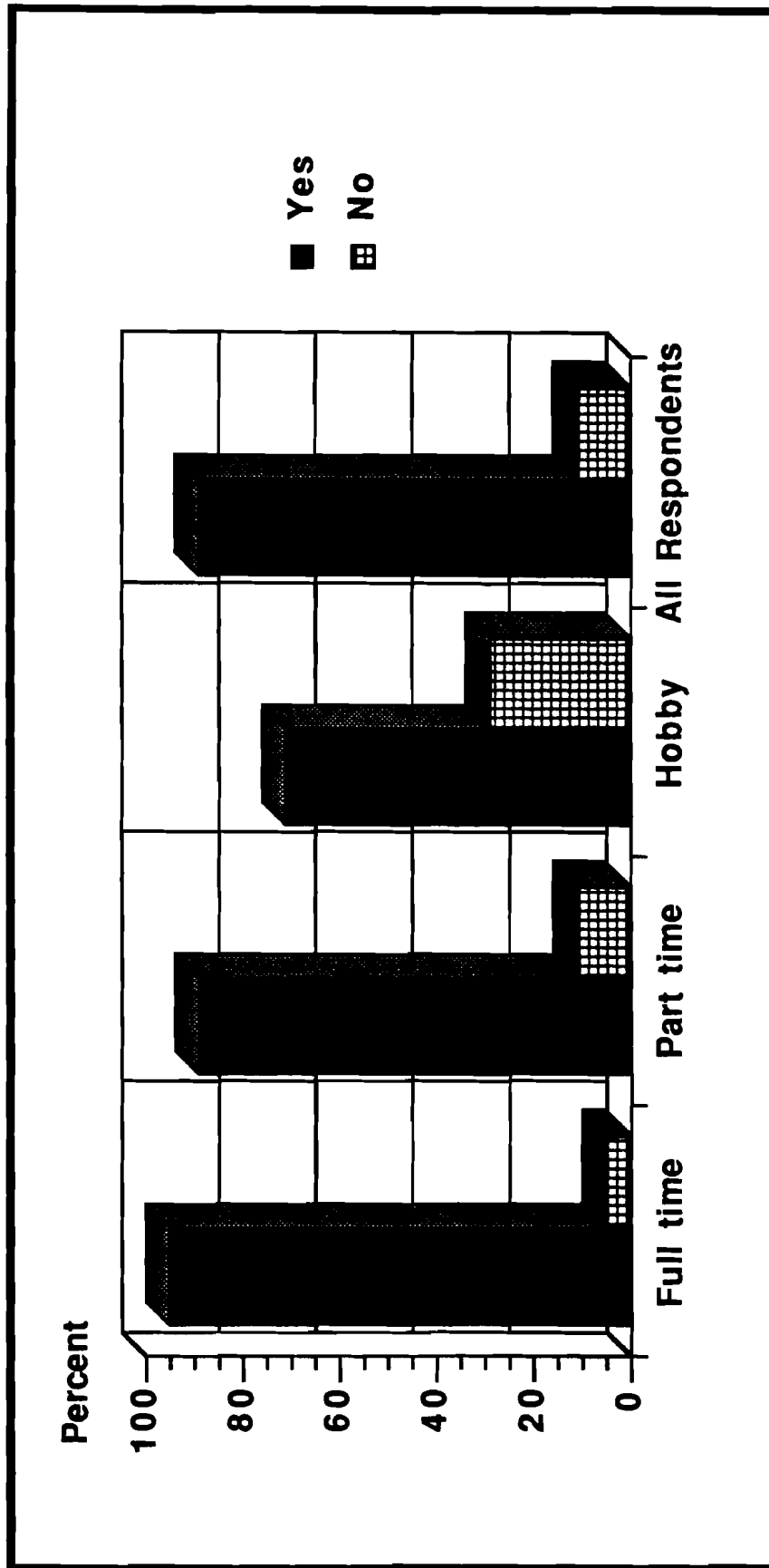
**Table 7**

# **Average Receipts (\$/colony)**

	<b>1985</b>	<b>1986</b>	<b>1987</b>	<b>1988</b>
<b>Full-time</b>	<b>61.15</b>	<b>70.68</b>	<b>81.72</b>	<b>72.13</b>
<b>Part-time</b>	<b>52.93</b>	<b>57.32</b>	<b>75.88</b>	<b>65.25</b>
<b>Hobby</b>	<b>41.91</b>	<b>35.17</b>	<b>44.71</b>	<b>43.93</b>

Figure 9

# Participation in Honey Support Program



## COLONY LOSSES

Several problems have been causing losses in the industry over the past several years. Losses from mites, drought, disease and pesticides are of importance. As seen in Table 8, 40 percent of the producers indicated they suffered colony losses from drought. An increasing number of producers identified trouble with mites.

## FINANCIAL CHARACTERISTICS

Figure 10 identifies the gross income of operations in 1988. Over 95 percent of the hobby producers indicated they had gross income of \$2,500 or less from their operation. Nearly 40 percent of the part-time producers had gross income between \$5,000 and \$20,000. Nearly 23 percent of the full-time producers had gross income of \$150,000 or over.

Several respondents indicated their beekeeping operation was not a major source of their income. As seen in Figure 11, 15 percent of the full-time producers indicated the operation was not a major source of their income. Full-time beekeepers are defined as having 300 or more colonies. Thus, some beekeepers in this category may have another profession. About 54 percent of the hobby producers indicated this operation was not a major source of their funding. Of all the producers nearly 70 percent said that the operation was a major source of their income.

Figure 12 identifies the net income of producers by size of operation. Sixteen percent of the full-time beekeepers suggested that their costs exceeded their income. This can be contrasted with 18 percent of the part-time beekeepers and 31 percent of the hobby beekeepers. It is apparent from the figure that the larger operations are the ones with the higher net income. Figure 13, identifying assets of operations, has a distribution similar to Figure 12. As expected the full-time operations appear to have larger assets while nearly 70 percent of the hobbyists have assets of less than \$2,500.

**Table 8**

# **Respondents With Colony Loss**

<b>(Percent)</b>	<b>1985</b>	<b>1986</b>	<b>1987</b>	<b>1988</b>
<b>Drought</b>	<b>19</b>	<b>19</b>	<b>25</b>	<b>40</b>
<b>Disease</b>	<b>3</b>	<b>3</b>	<b>5</b>	<b>5</b>
<b>Mites</b>	<b>3</b>	<b>4</b>	<b>7</b>	<b>15</b>
<b>Other</b>	<b>22</b>	<b>24</b>	<b>21</b>	<b>20</b>

Figure 10

# Gross Income, 1988

Percent

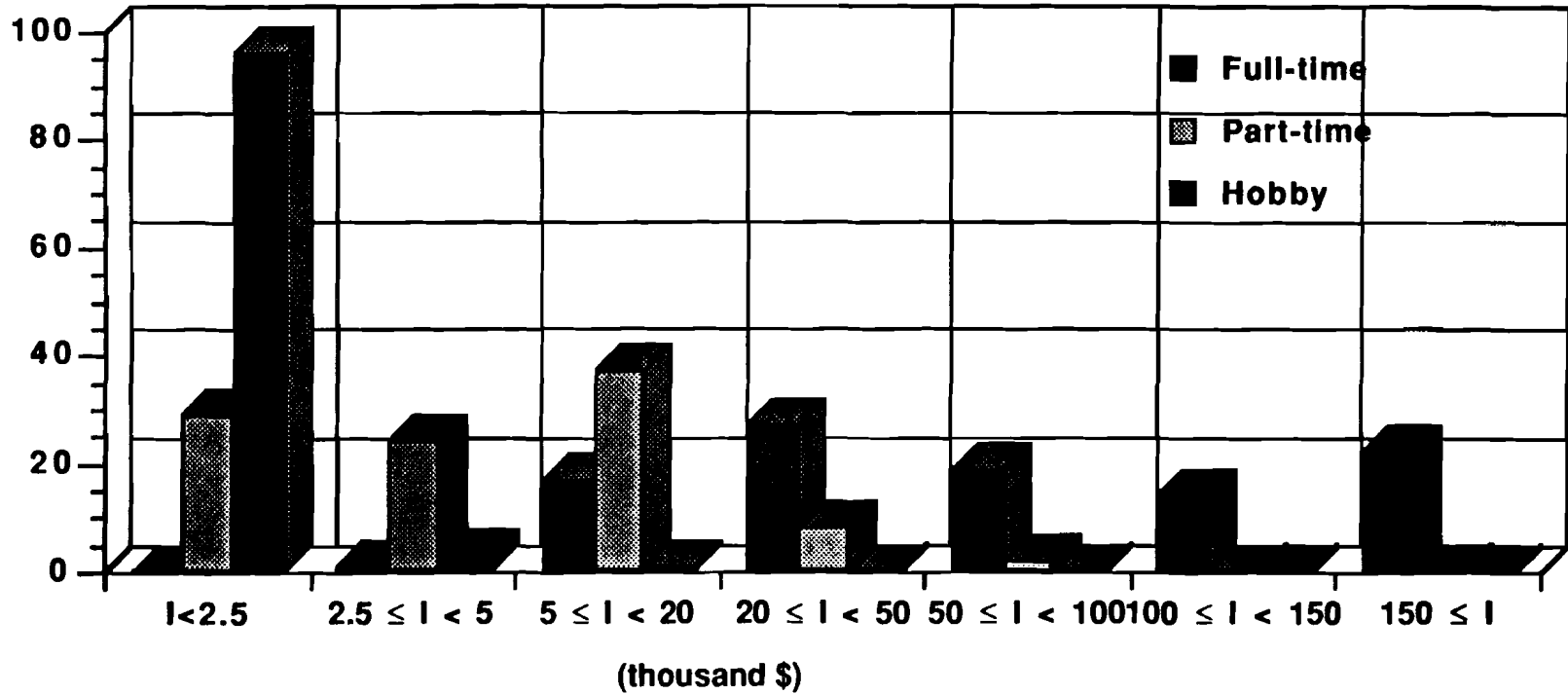


Figure 11

# Beekeeping Occupation as Major Source of Income

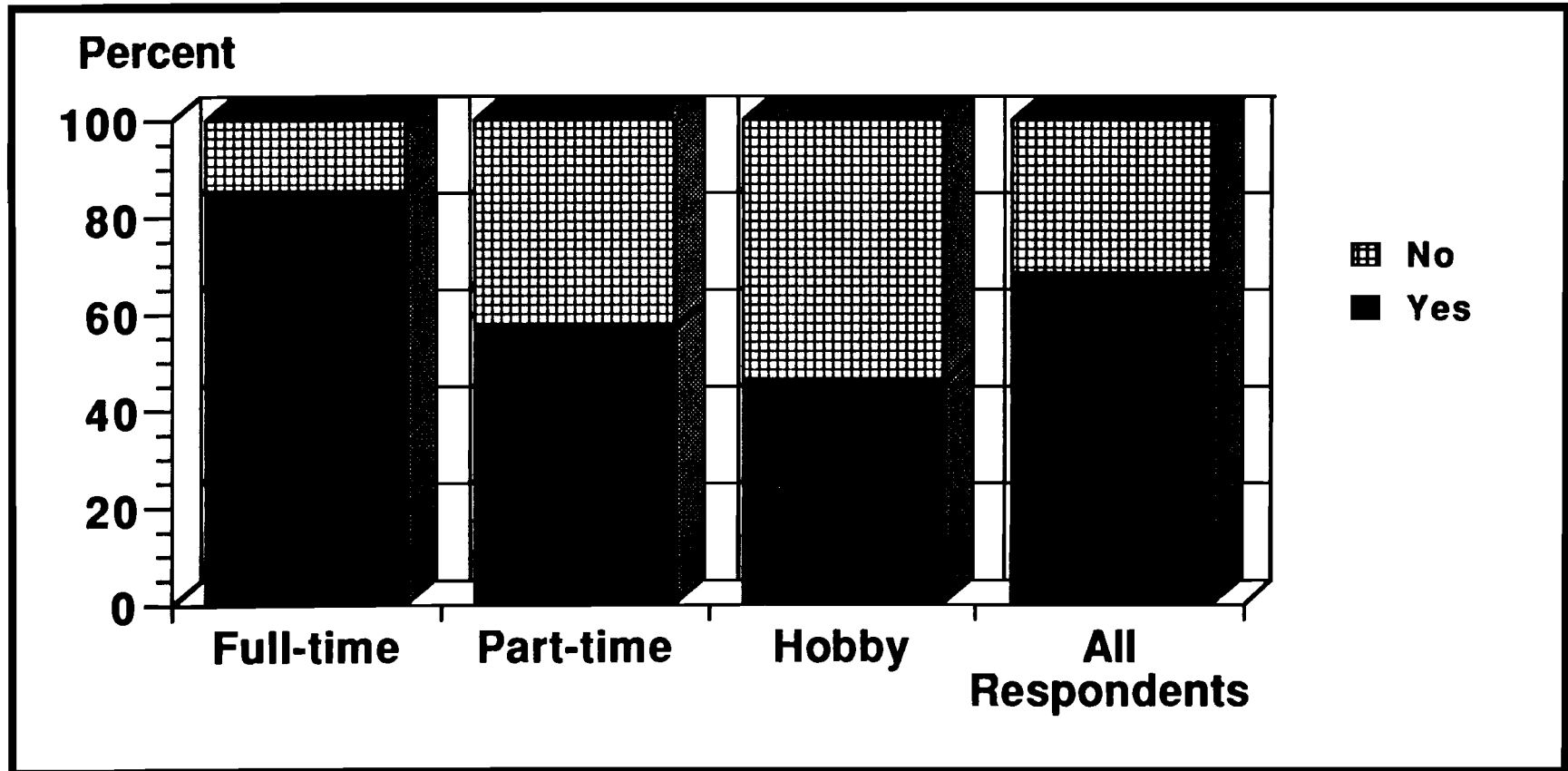


Figure 12

# Net Income, 1988

29

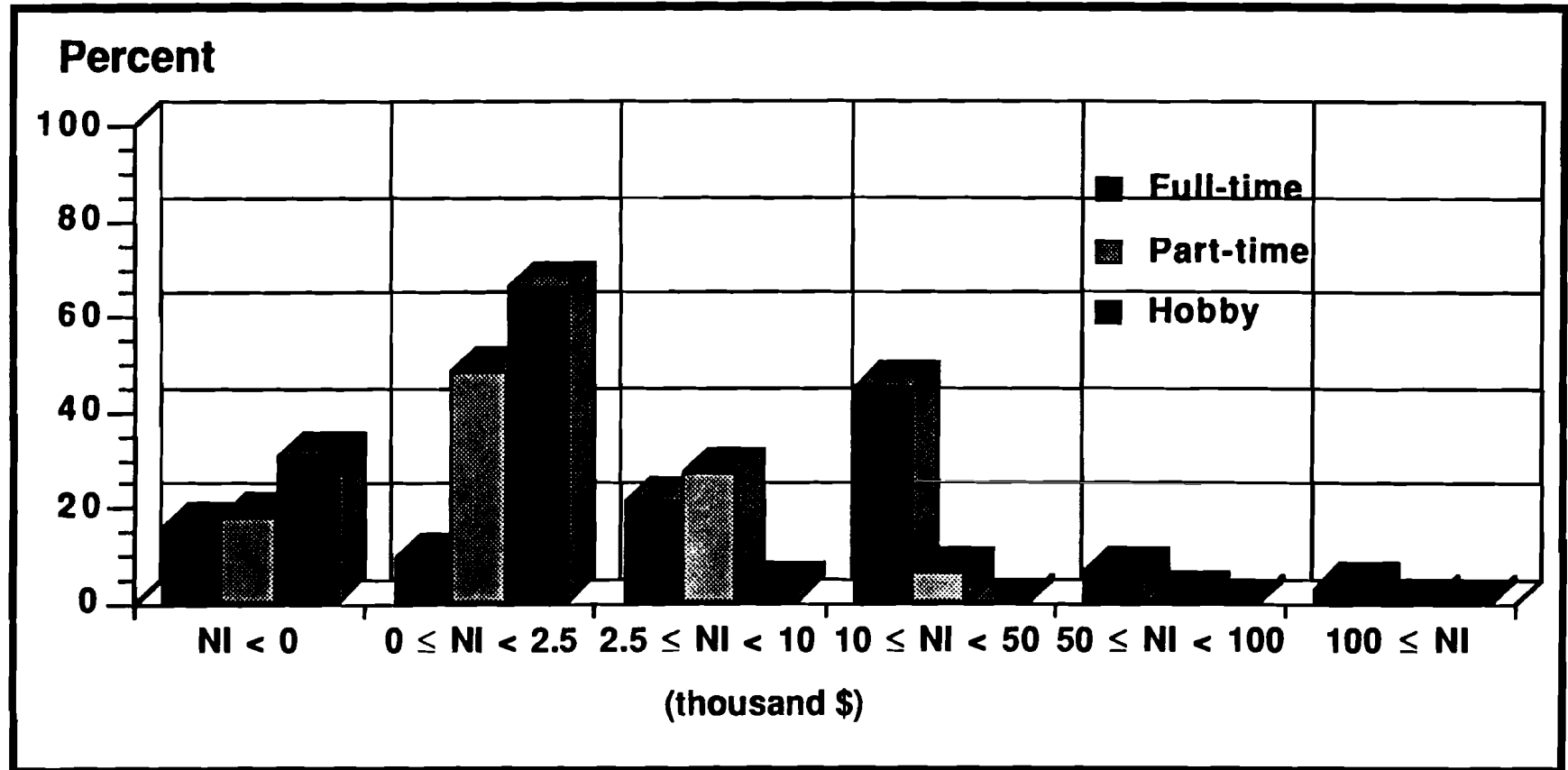
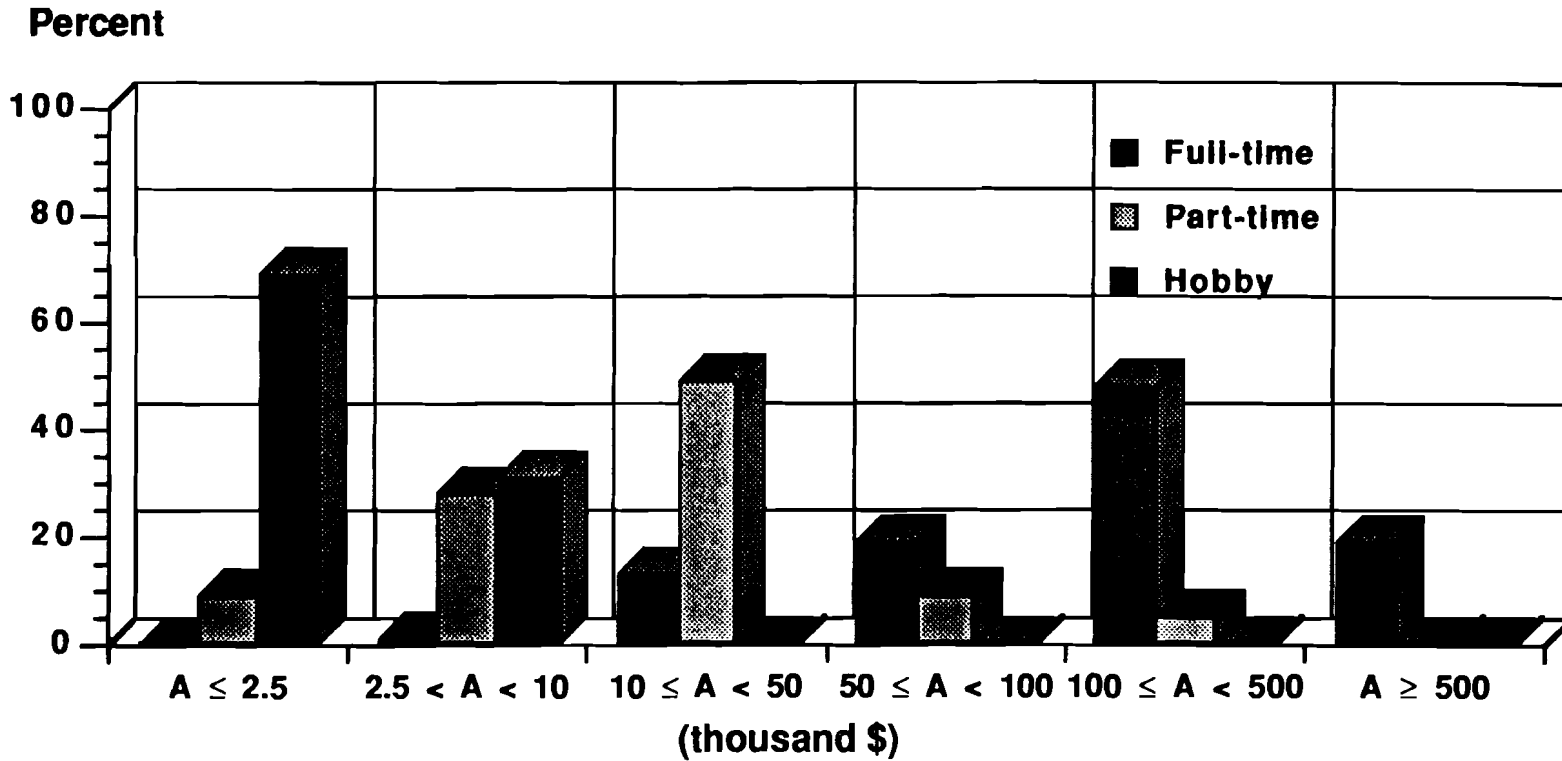


Figure 13

# Asset Value, 1988

30





Part-time and hobby producers in the industry appear to have relatively little debt as seen in Figure 14. Full-time operators, not surprisingly, carry the most debt. Approximately 65 percent report some debt. About 75 percent of the part-time operators and 93 percent of the hobby producers reported zero debt. Only full-time operations reported debt in excess of \$100,000.

### DEMOGRAPHIC CHARACTERISTICS

Several demographic characteristics of the industry were identified. As seen in Figure 15, nearly 95 percent of those in the industry are male. This statistics does not change by the size of the operation. Producers are a fairly well educated group as seen by Figure 16. Over fifty percent of the producers have attended college or completed college.

The majority of producers are between 35 and 65 years of age, as seen in Figure 17. The hobbyist beekeepers have a larger percent of respondents 65 years of age or older. It does appear that there are fewer respondents less than 35 years of age than 65 years of age or older. Table 9 identifies the average number of years respondents have been in the industry. It is clear from this table that there are several people who enjoy the industry and are dedicated to their operations in the long run.

Figure 14

# Debt, 1988

32

Percent

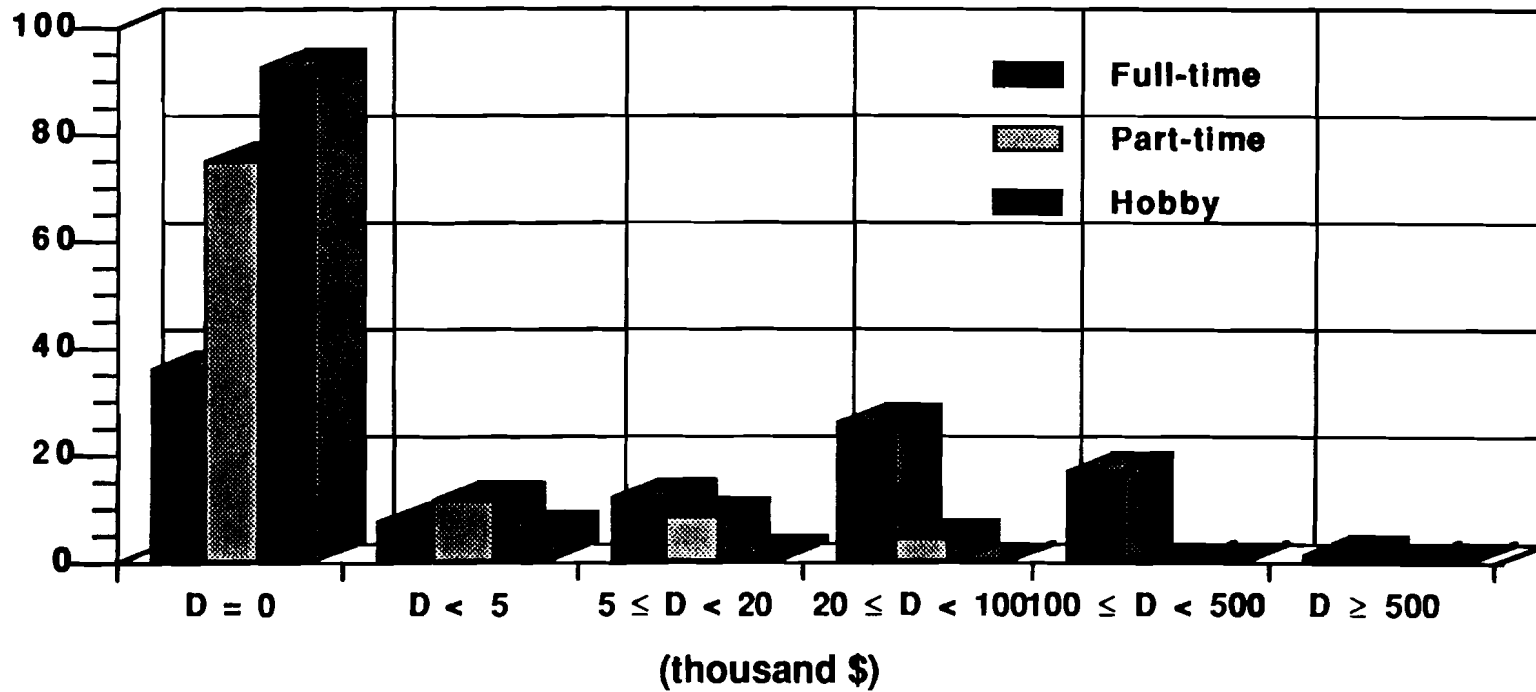


Figure 15

# Sex

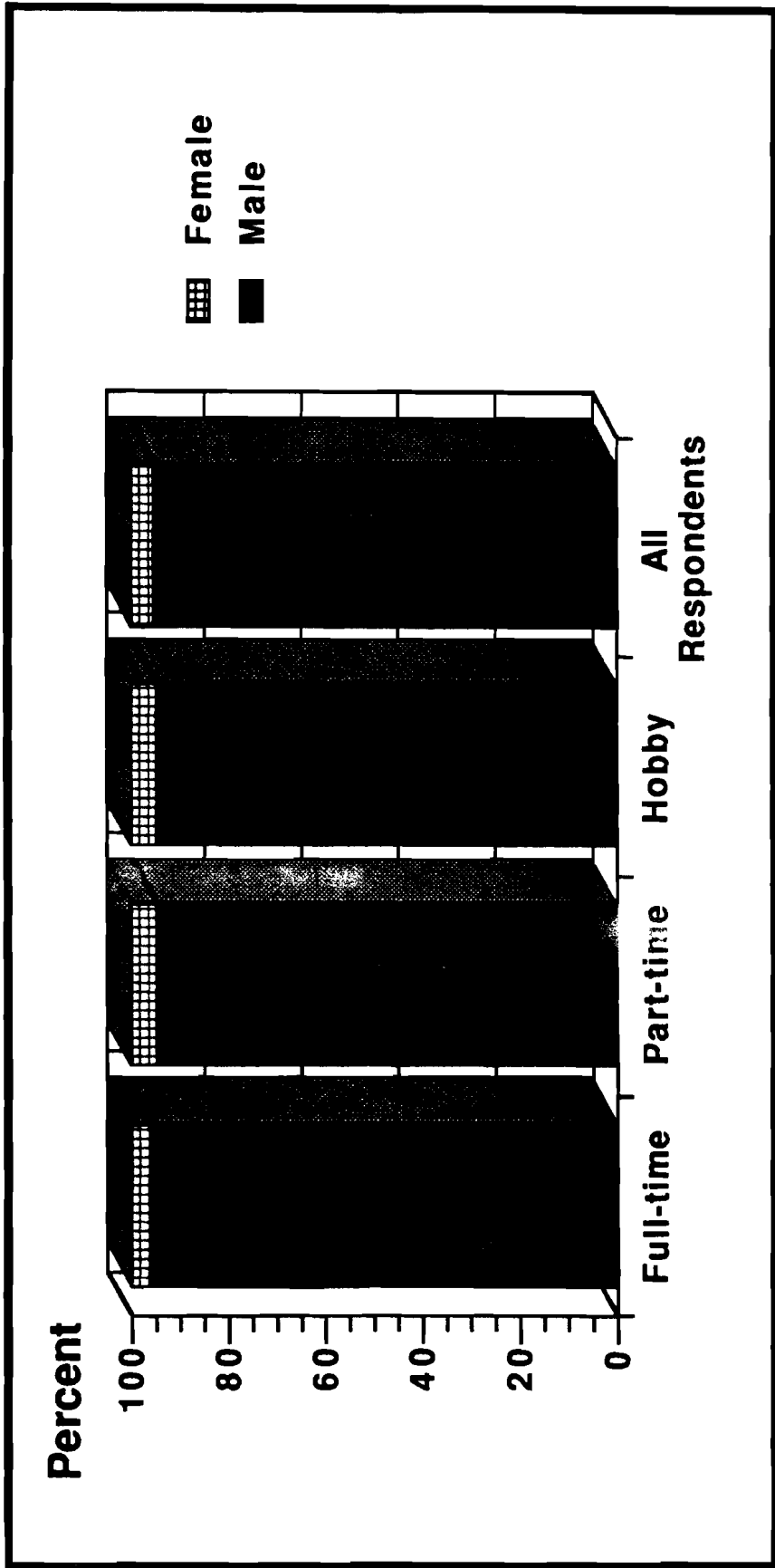


Figure 16

# Education

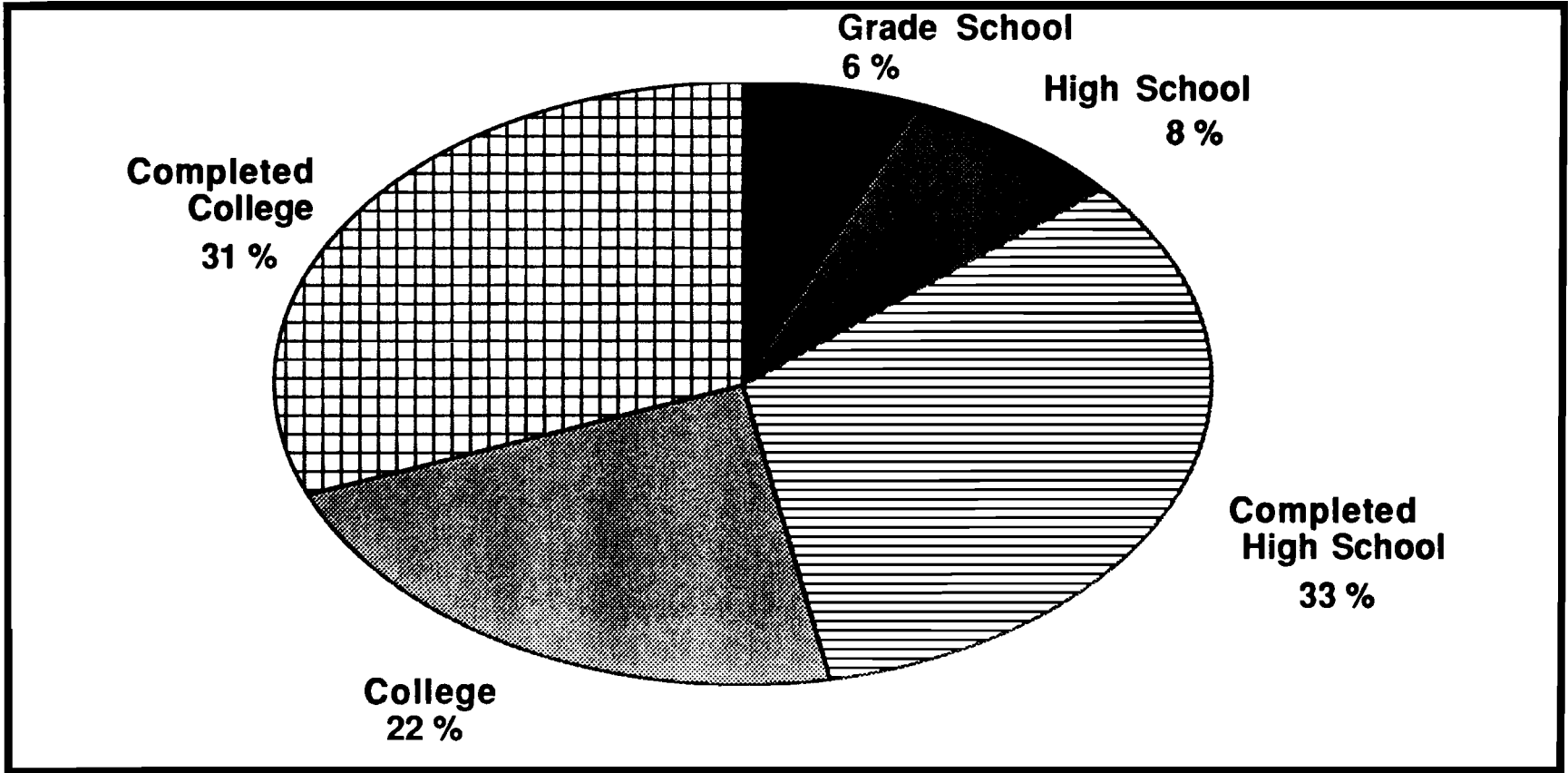
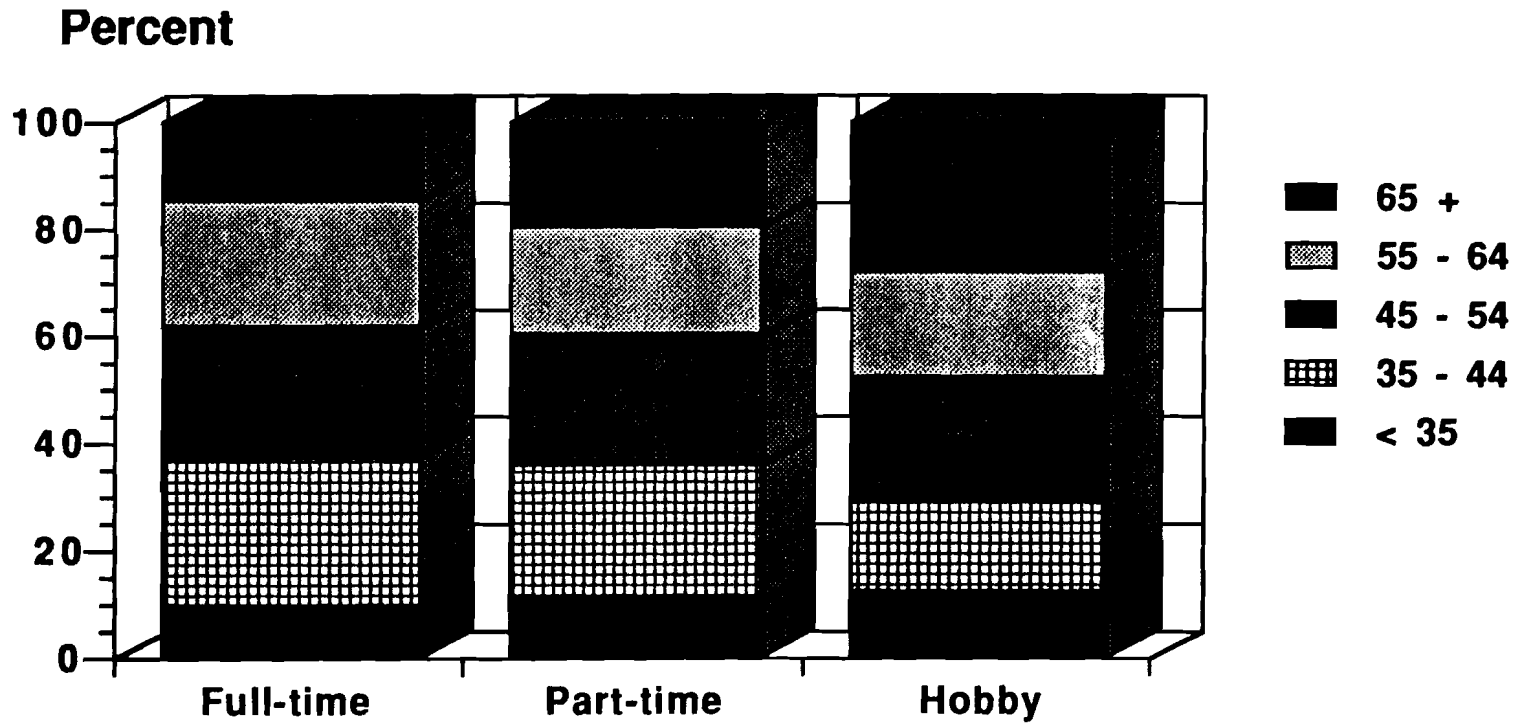


Figure 17

# Age



**Table 9**

# **Number of Years in Industry**

	<b>Average</b>	<b>Range</b>
<b>Full-time</b>	<b>23</b>	<b>2 - 67</b>
<b>Part-time</b>	<b>18</b>	<b>1 - 85</b>
<b>Hobby</b>	<b>12</b>	<b>0 - 57</b>

## ADDITIONAL ANALYSIS

The statistics presented here are a small sample of the data from the national survey of the honey industry. Additional analyses include studying the characteristics of those producers who provide pollination services and the contribution this service makes to an operation's total revenue. Revenues are one side of the profit picture for an operation. The other side includes expenses. They must be analyzed. They will be divided into labor costs, supplies, building, equipment, overhead and marketing activities. Once tabulated they will be compared with the average revenue per pound of honey and per colony. The responses of packers, brokers and importers will be analyzed. Furthermore, the marketing activities of producers, packers, importers and brokers will be summarized. The characteristics of those who participate in the support program will be compared with the characteristics of those who do not participate in the program. All of these analyses will assist in identifying the issues important to the industry and the current economic status of the industry.

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