

**PANEL PRODUCTS:
A PERSPECTIVE FROM FURNITURE AND CABINET
MANUFACTURERS
IN THE SOUTHERN UNITED STATES**

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Abstract

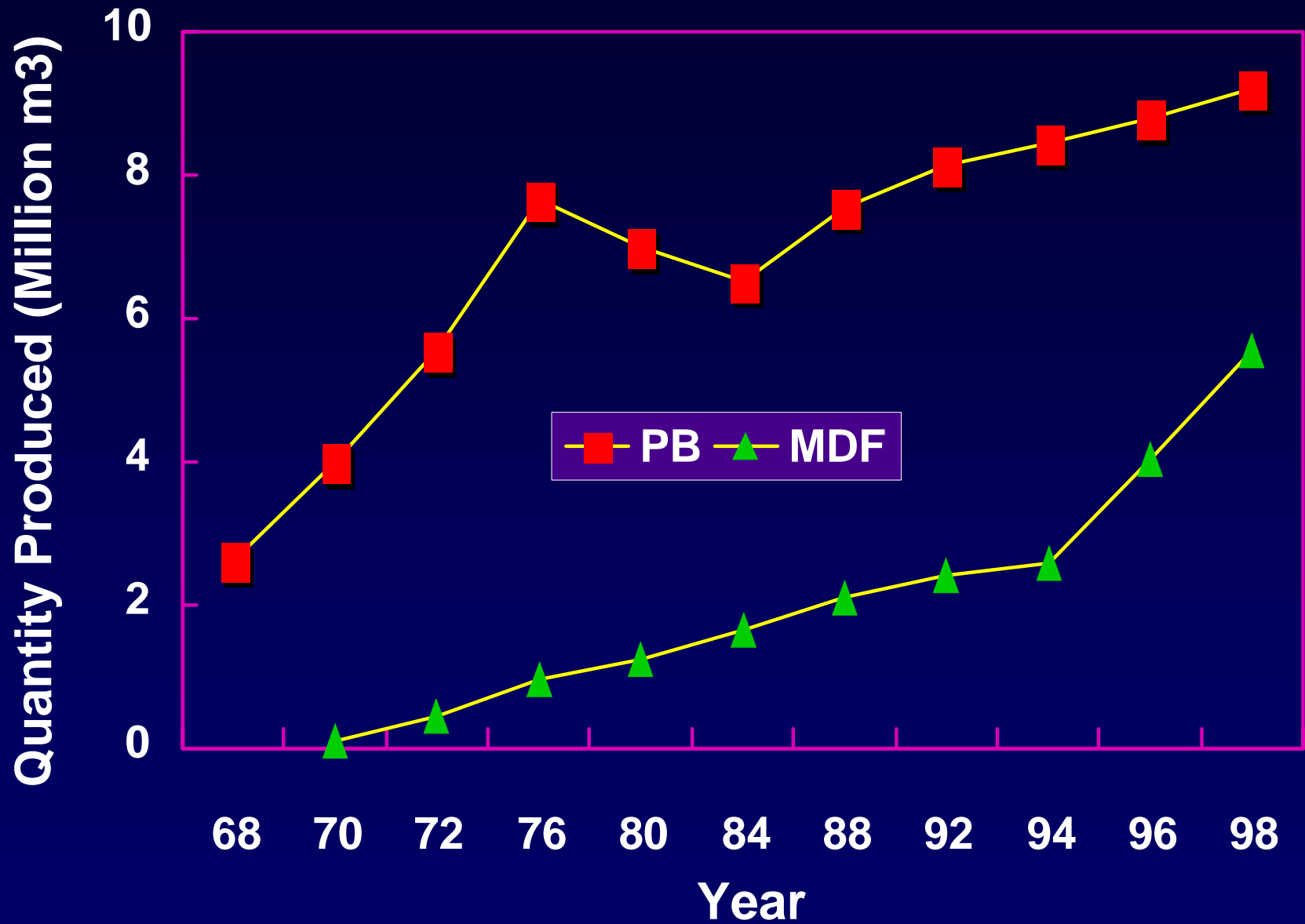
Particleboard and medium density fiberboard (MDF) are primary composite panel products used in the manufacture of furniture, cabinets, millwork, molding, door parts, floor underlayment, laminate flooring and many other products. The objectives of this study were to understand the southern U.S. furniture and cabinet manufacturer perspective in using these panel products relative to a non-composite panel, plywood, and to determine their selection criteria. The study addresses technical, economic and performance characteristics.

It was found that nearly half of the total value of raw materials used by respondents in 1997 was comprised of these three panel products. In all but one industry sector studied, respondents said they planned to increase usage of all three panel types. The main reason respondents use these products are that they are economical to use, while the main reason they are not used is customer objections.

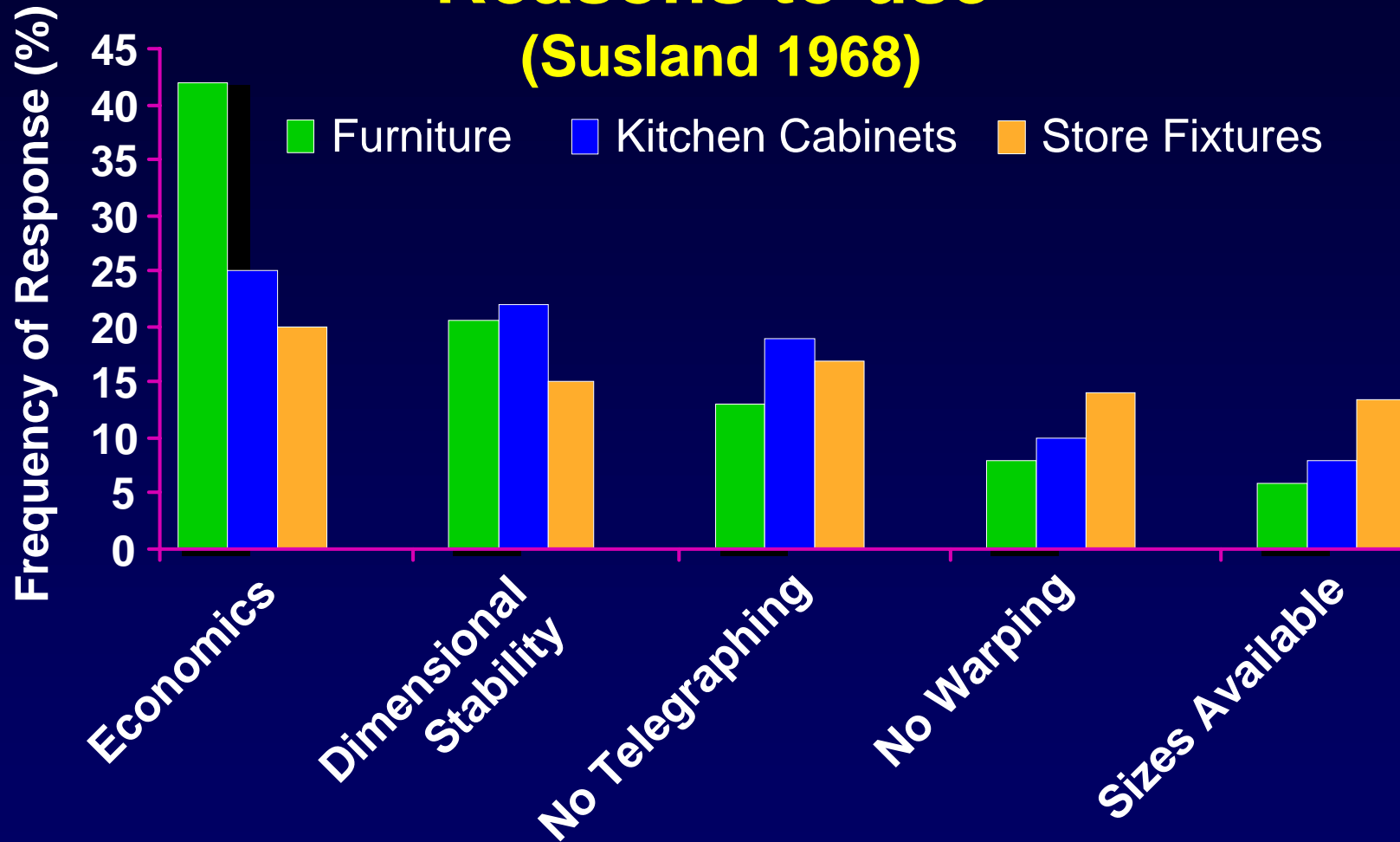
Background **Background**

- History of Products Development
- Early Work by Dr. Suchsland
- Other Recent Related Work
- Scope of This Study

Particleboard/MDF Industry Development



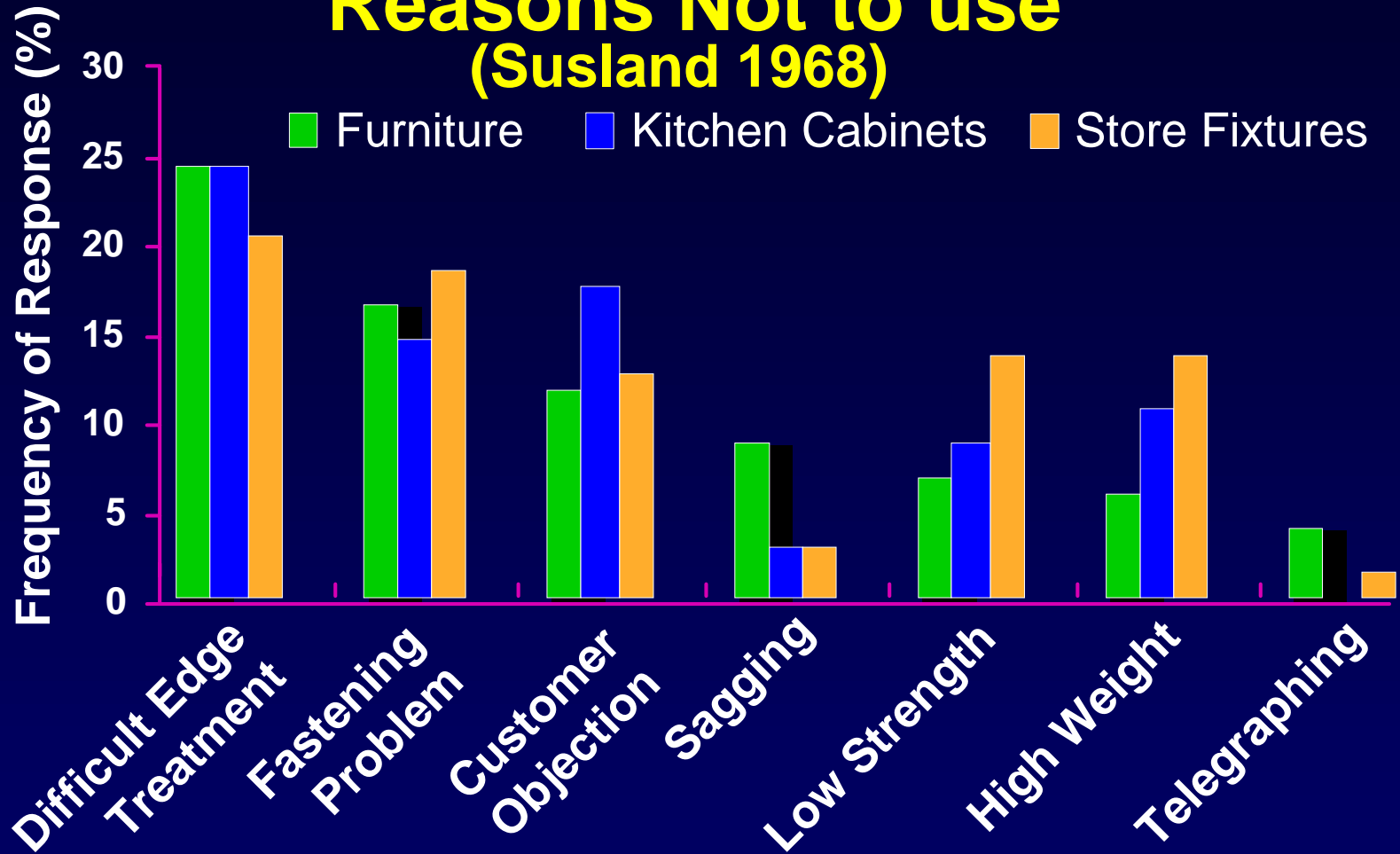
Particleboard Reasons to use (Susland 1968)



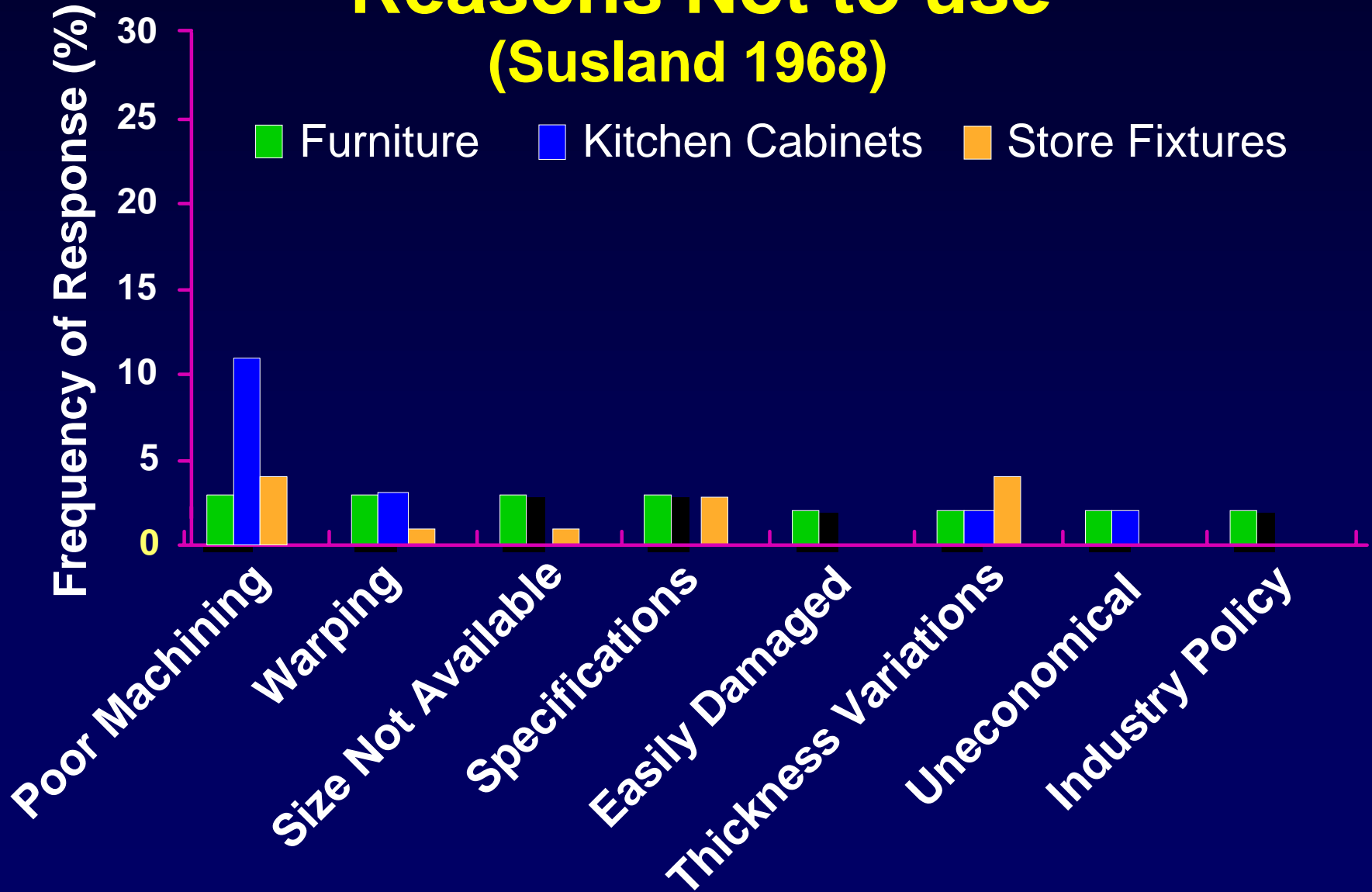
Particleboard Reasons to use (Susland 1968)



Particleboard Reasons Not to use (Susland 1968)



Particleboard Reasons Not to use (Susland 1968)



Other Related Work

- Temple-Inland Panel Products Technology Center Study on PB Properties (1996)
- Ducker Research Co. Inc. study on Markets Potential for Industrial Panels (1998)

Scope of Current Work

- Value-added manufacturers in the southern United States
- Customer perspectives for panel products (particleboard, MDF and plywood) based on technical, economic, and performance characteristics

METHODOLOGY

We examined panel usage by value-added manufacturers in the southern United States (Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina and Texas).

The value-added manufacturers included were in six Standard Industrial Classification (SIC) categories.

A random sample of 1,700 companies in these SIC categories was drawn from the PhoneDisk PowerFinder CD-ROM directory.

METHODOLOGY

The study was conducted using mailed surveys. Survey development and implementation followed methods and procedures recommended by Dillman and described as the Total Design Method.

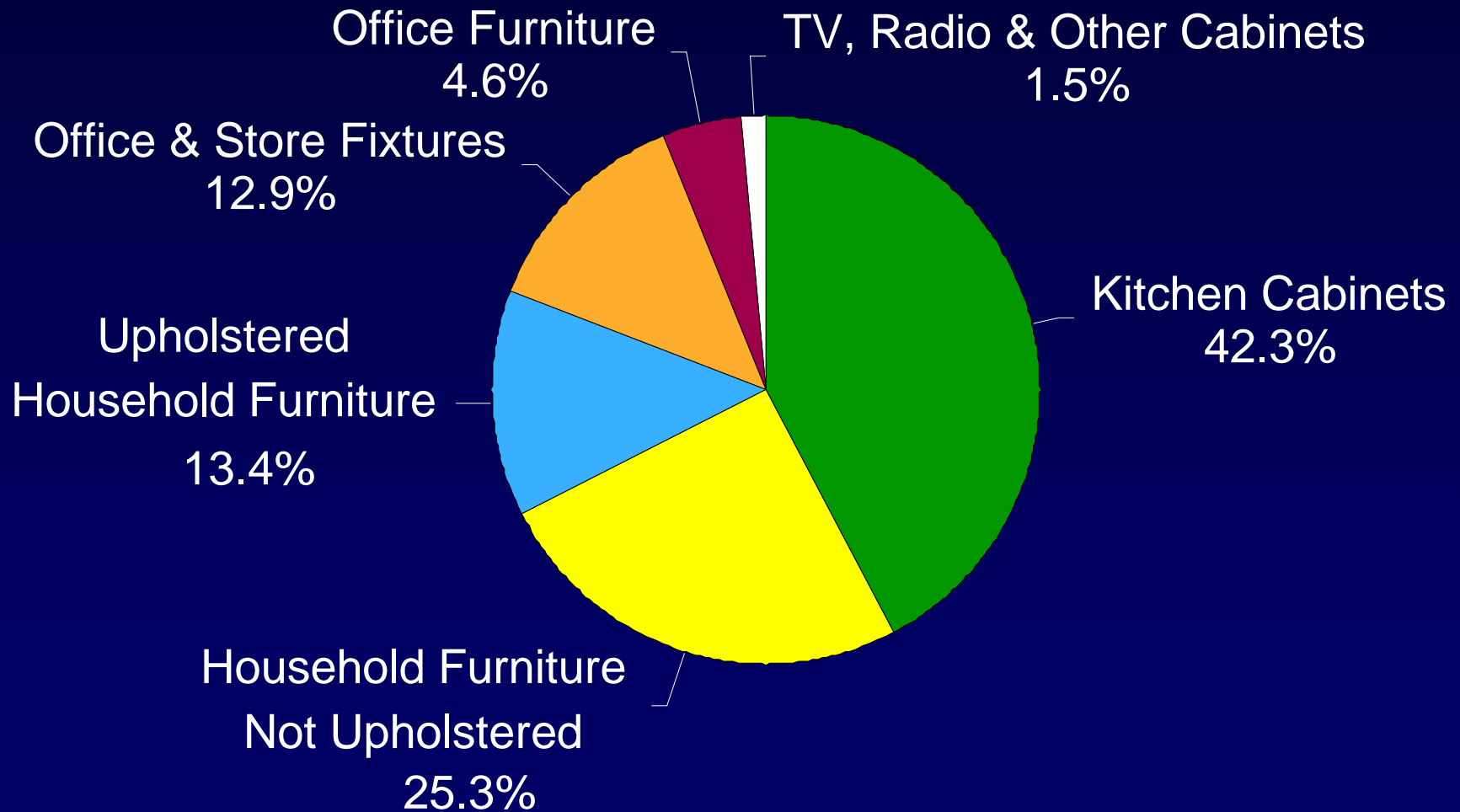
Of the 1,700 surveys mailed, 410 were undeliverable. 194 returned usable surveys resulting in an adjusted response rate of 15 percent.

Non-response bias was measured using two-tailed t-tests conducted on frequency of companies by state and by SIC category, comparing respondents and companies that fell into the non-response/undeliverable category. No difference in state distribution nor SIC category was detected at $\alpha=0.05$.

Results

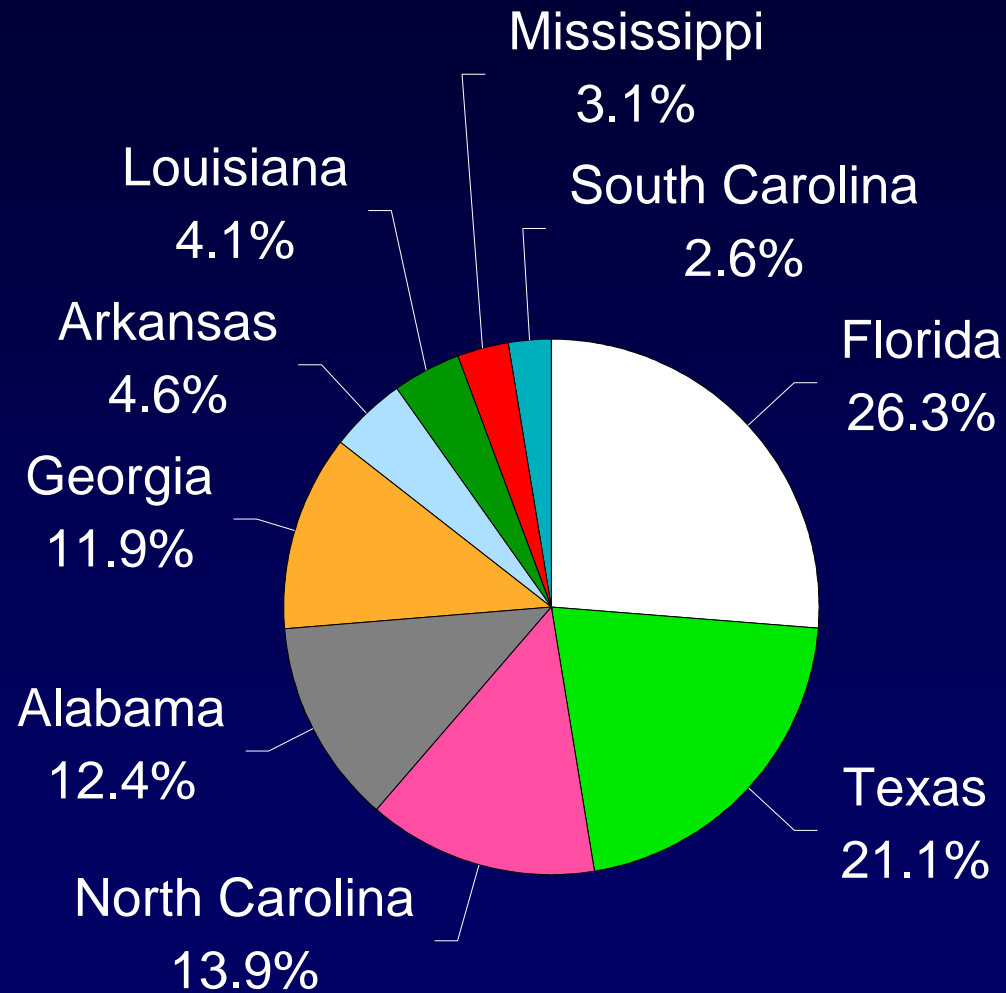
Respondent Manufacturing Category

(n=194)



Respondents by State

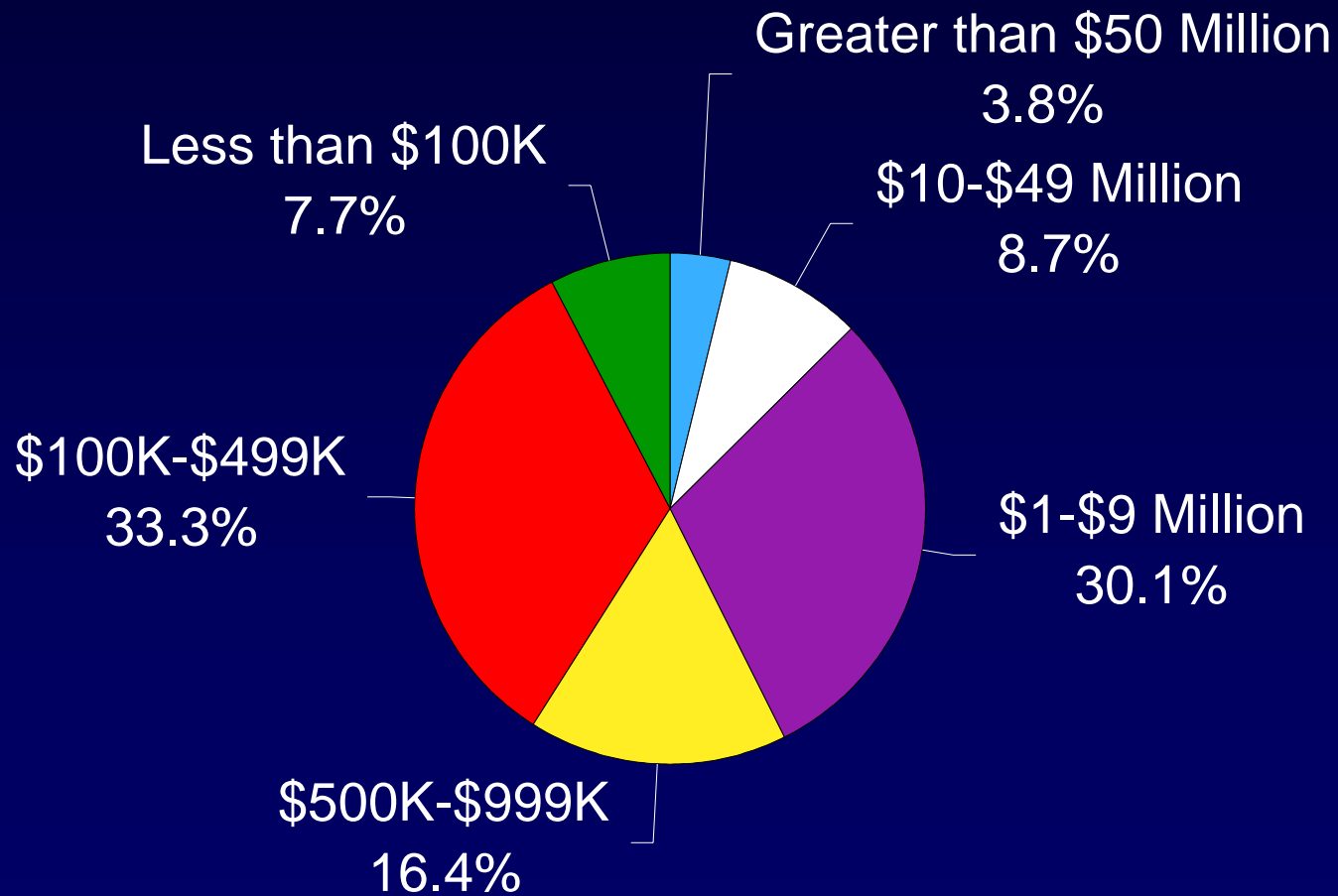
(n=194)



Sales Category

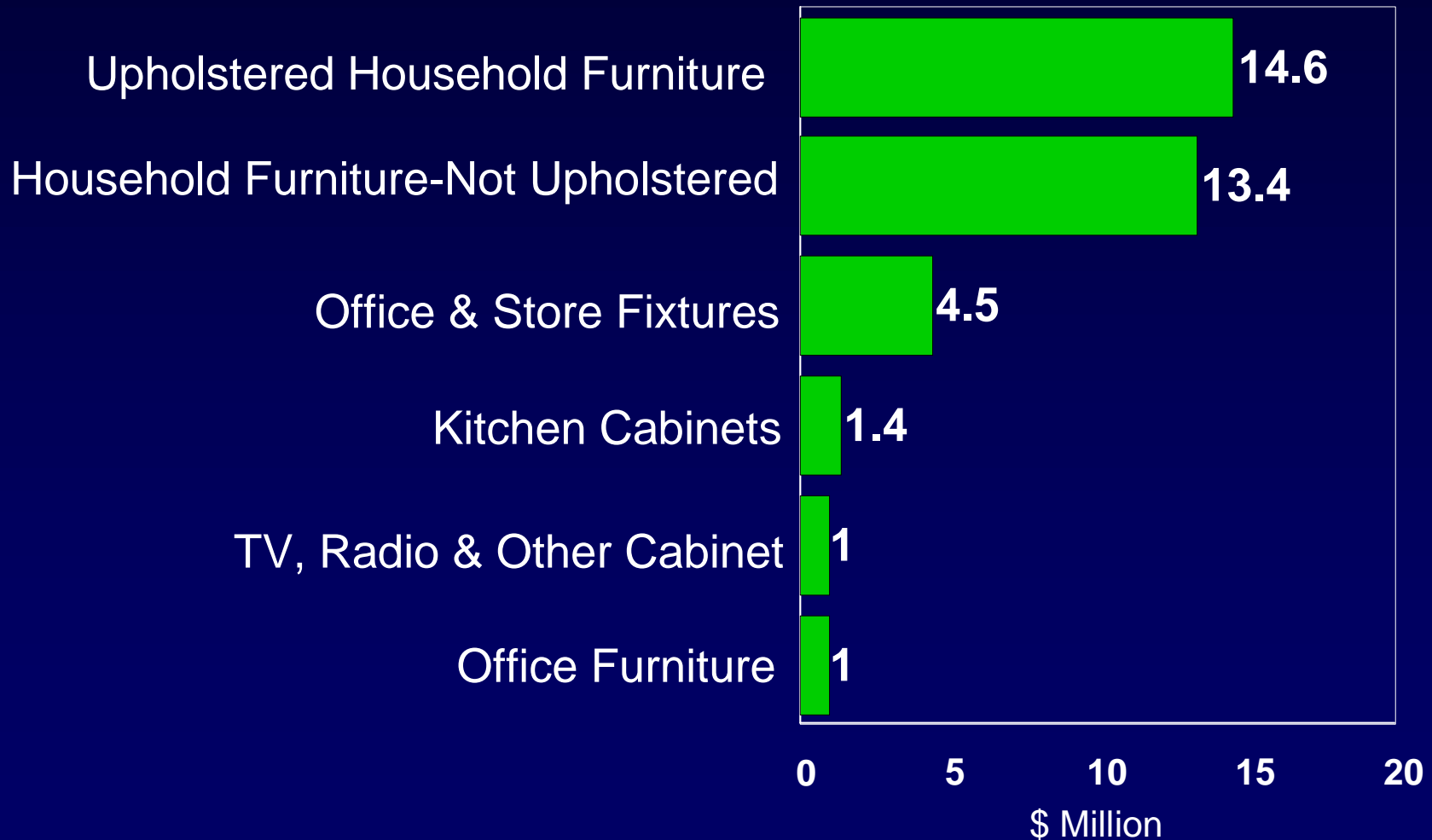
1997 Total Company Revenue

(n=183)



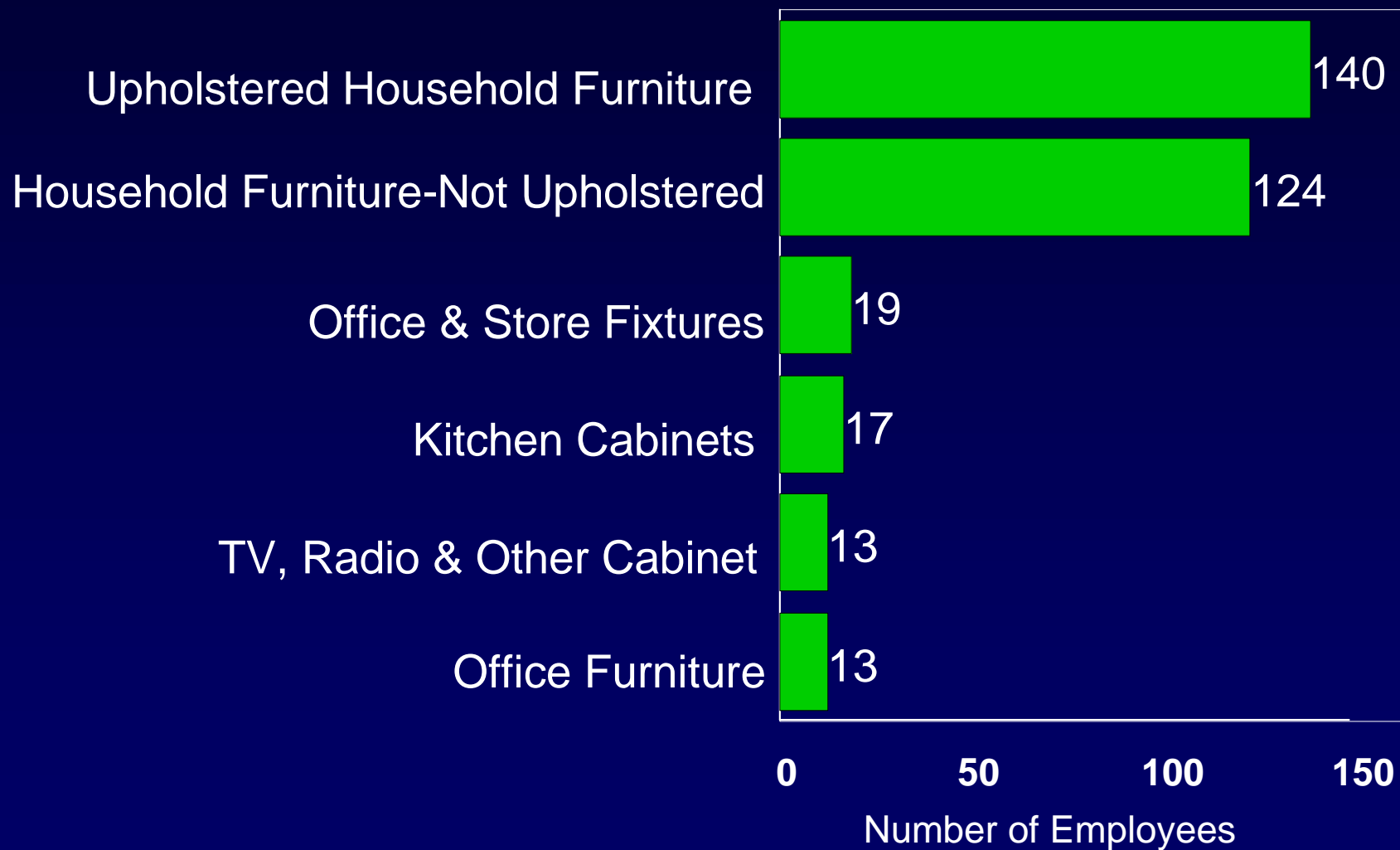
Average 1997 Sales by Manufacturer Category \$ Million

(n=183)



Average 1997 Number of Employees by Manufacturer Category

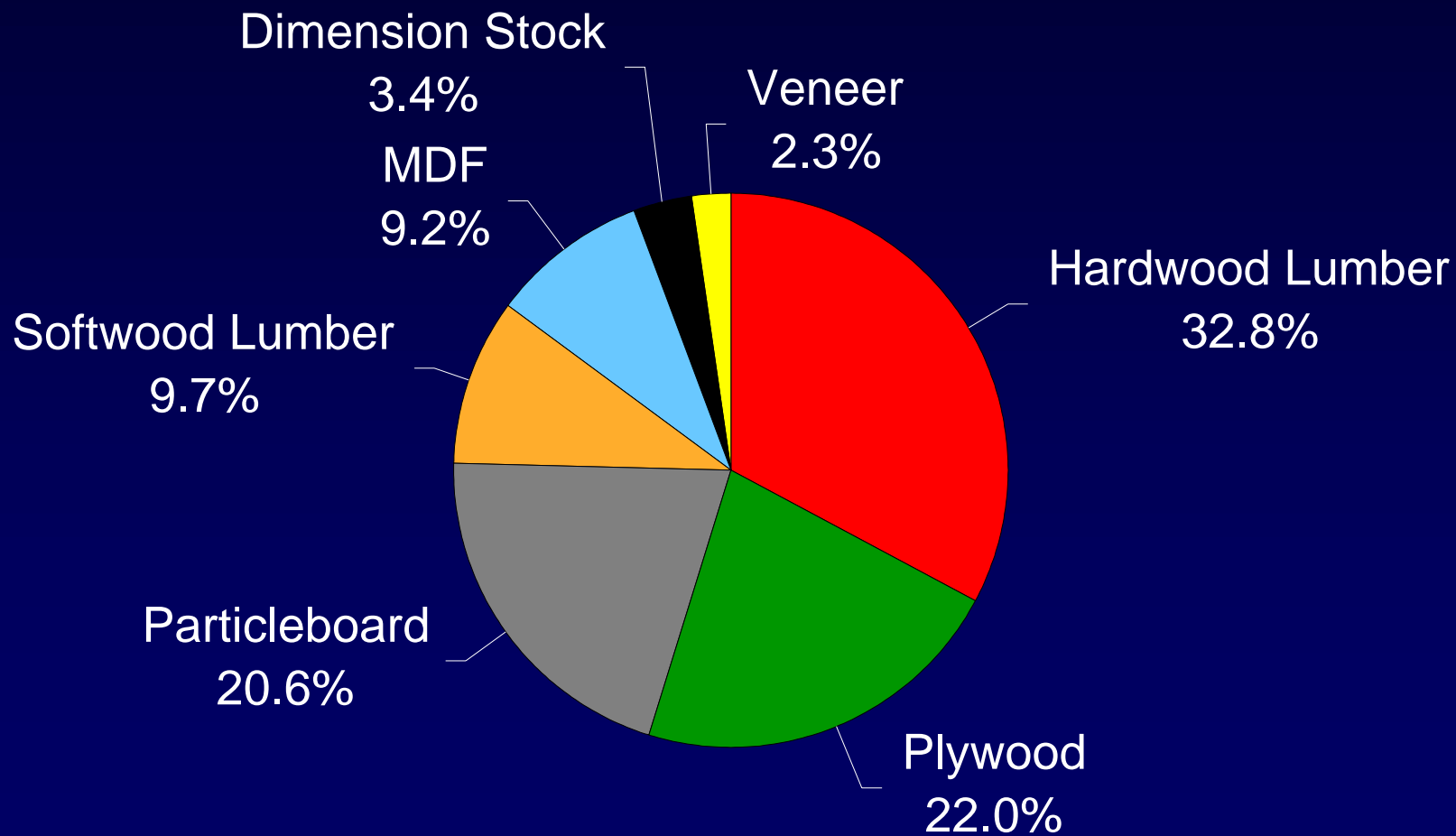
(n=183)



Raw Materials Used

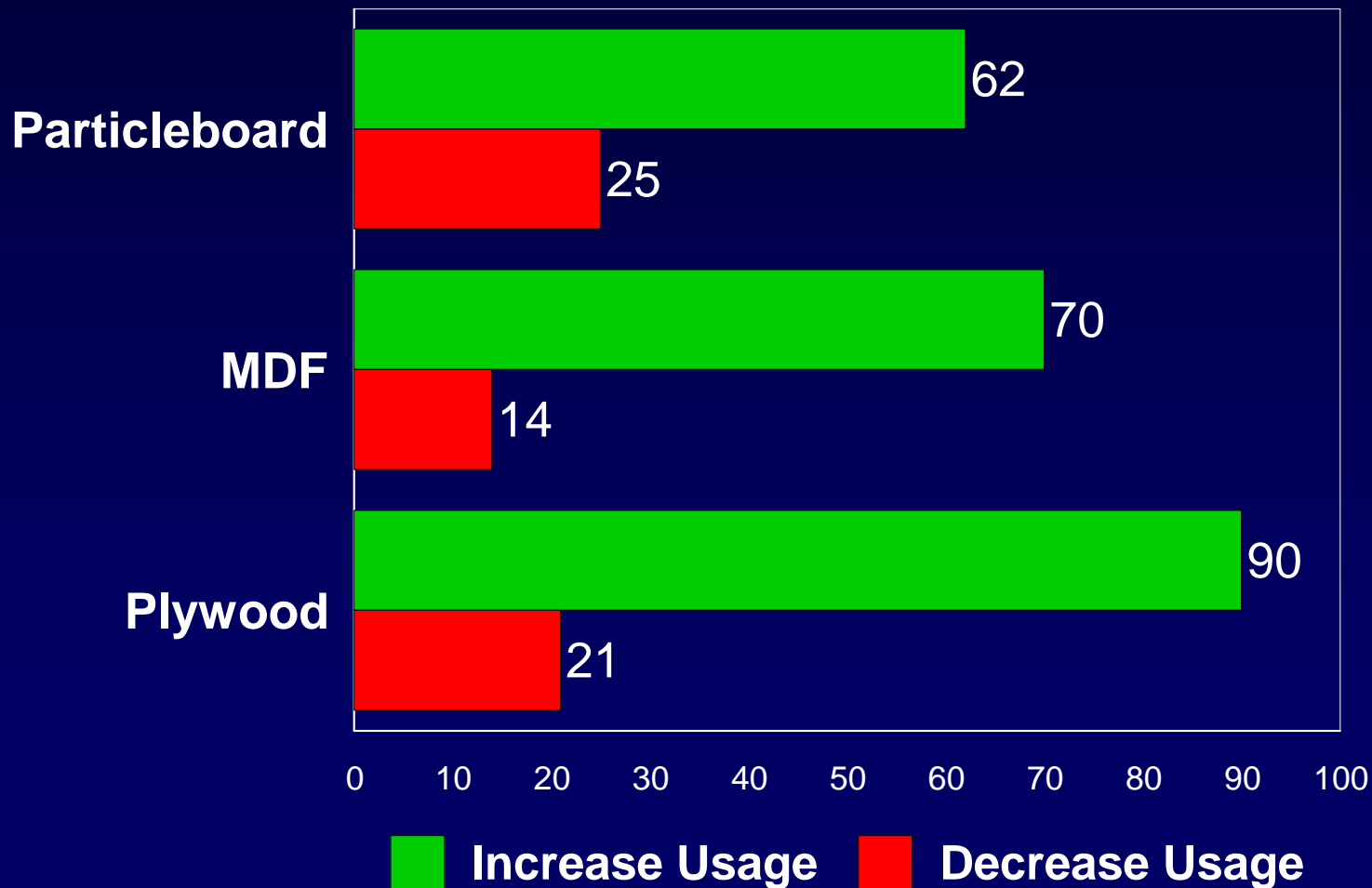
Percent of 1997 Total Raw Material Usage by Value

(n=183)



Number of Companies that Plan to Increase or Decrease Usage of Particleboard, MDF and Plywood

(n=194)



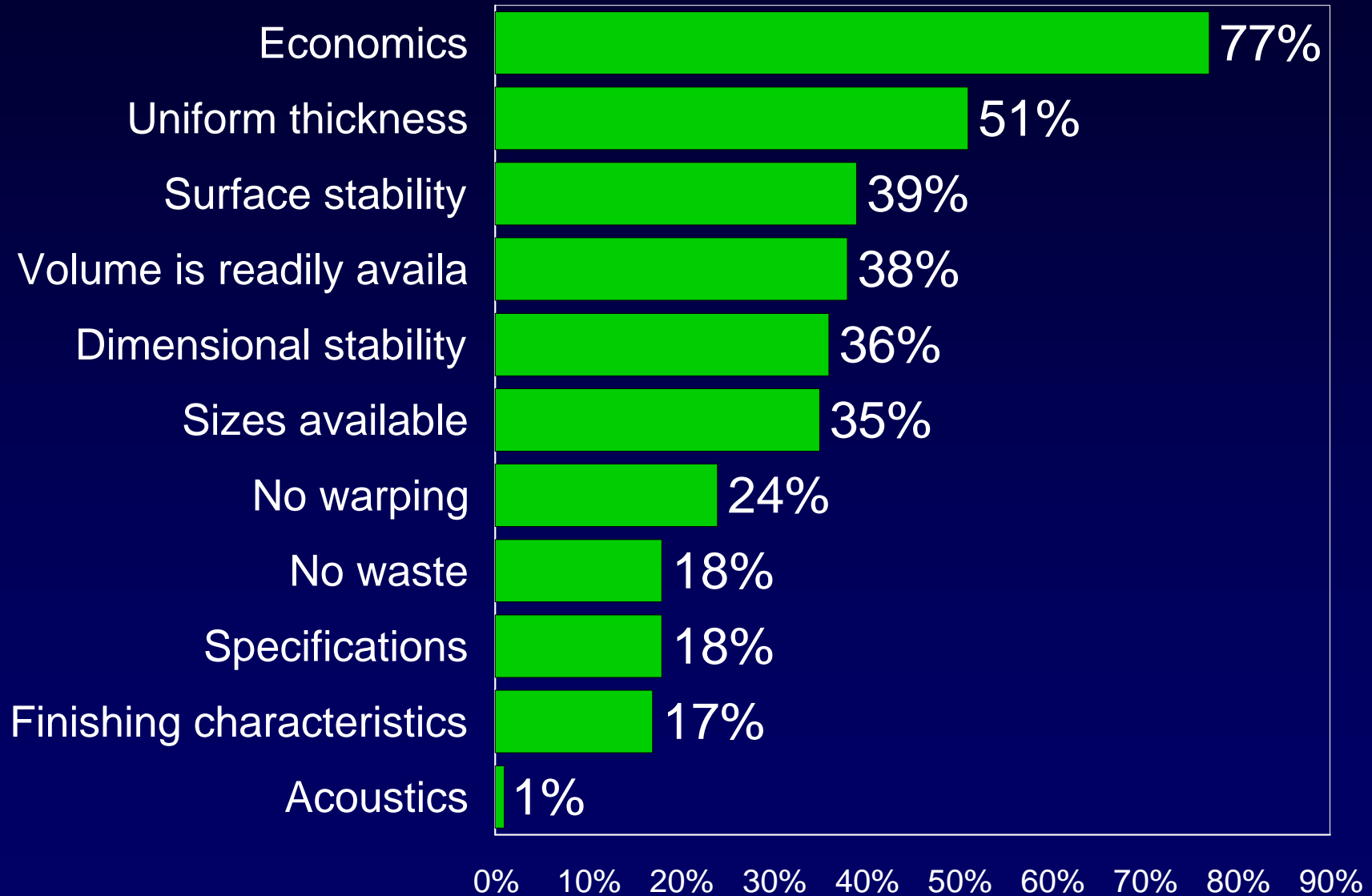
Percent of Companies that Plan to Increase or Decrease Usage of Particleboard, MDF and Plywood by Manufacturing Sector

	Kitchen Cabinets (n=82)	Household Furniture (n=49)	Upholstered Furniture (n=26)	TV, Radio, Etc. Cabinets (n=3)	Office Furniture (n=9)	Office & Store Fixtures (n=25)
<i>Particleboard</i>						
Increase	46	18	8	33	33	52
Decrease	17	6	8	0	22	16
<i>MDF</i>						
Increase	52	10	4	100	44	56
Decrease	9	6	0	0	11	8
<i>Plywood</i>						
Increase	57	35	50	66	22	36
Decrease	9	8	4	0	44	20

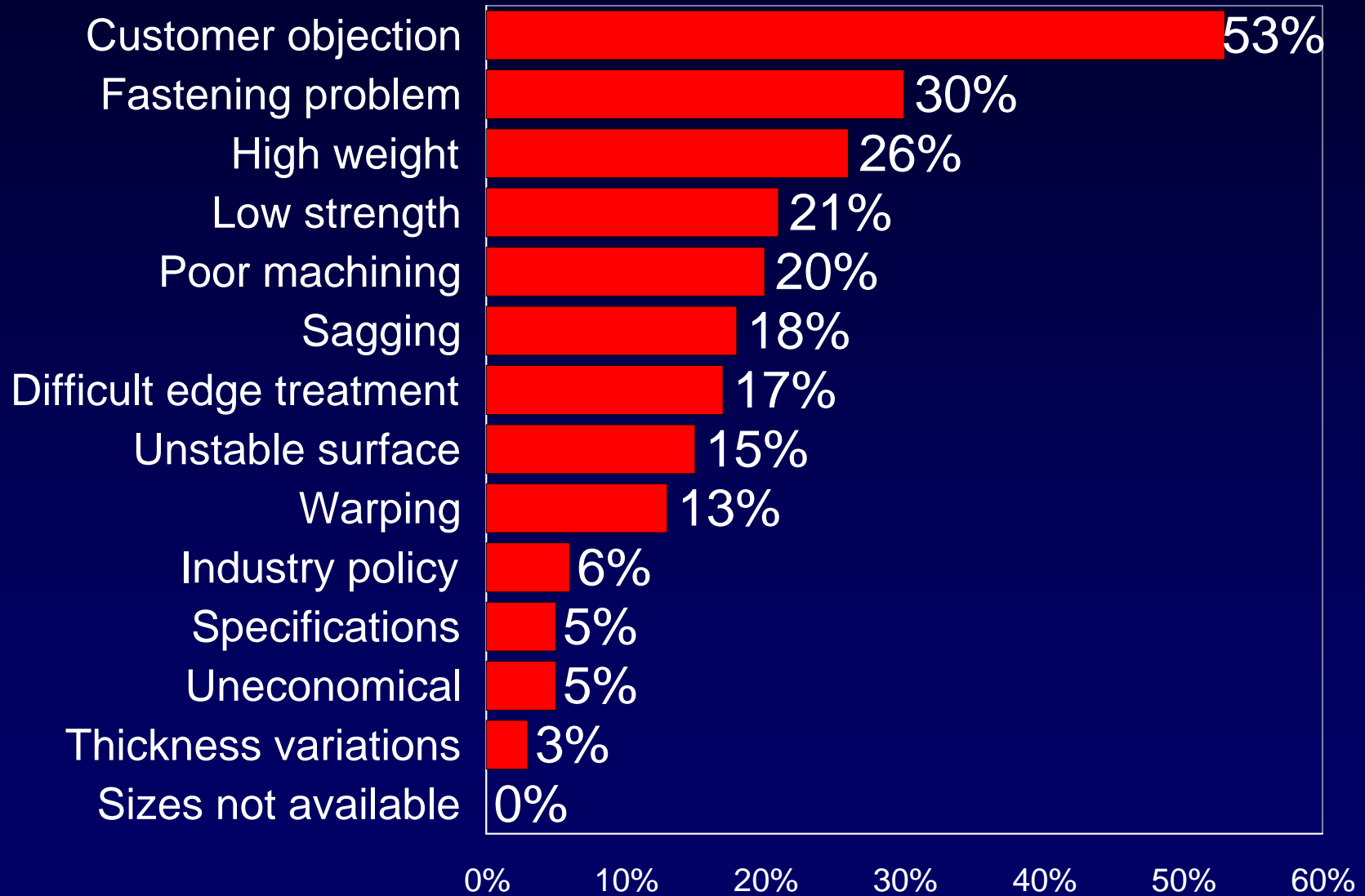
**Volumes of Raw Materials Used
for Panel Cores, Overlays and Pre-Lam. Panels in 1997**

<i>Panel Core</i>	
Particleboard (sq. ft. 3/4")	1,141,470
MDF (sq. ft. 3/4")	335,220
Hardboard (sq. ft)	212,671
Hardwood Lumber (MBF)	592,580
Softwood Lumber (MBF)	353,260
Hardwood Plywood (sq. ft. 3/8")	83,398
Softwood Plywood (sq. ft. 3/8")	74,736
<i>Overlays</i>	
Wood Veneer (sq. ft.)	146,228
High Pressure Laminates (sq. ft.)	302,272
Vinyl (sq. ft.)	121,264
Crossband Material (sq. ft.)	125,000
<i>Pre-Laminated Panels</i>	
Solid Wood Panels (sq. ft.)	59,762
Overlaid Particleboard (sq. ft.)	43,724
Overlaid MDF (sq. ft.)	39,050

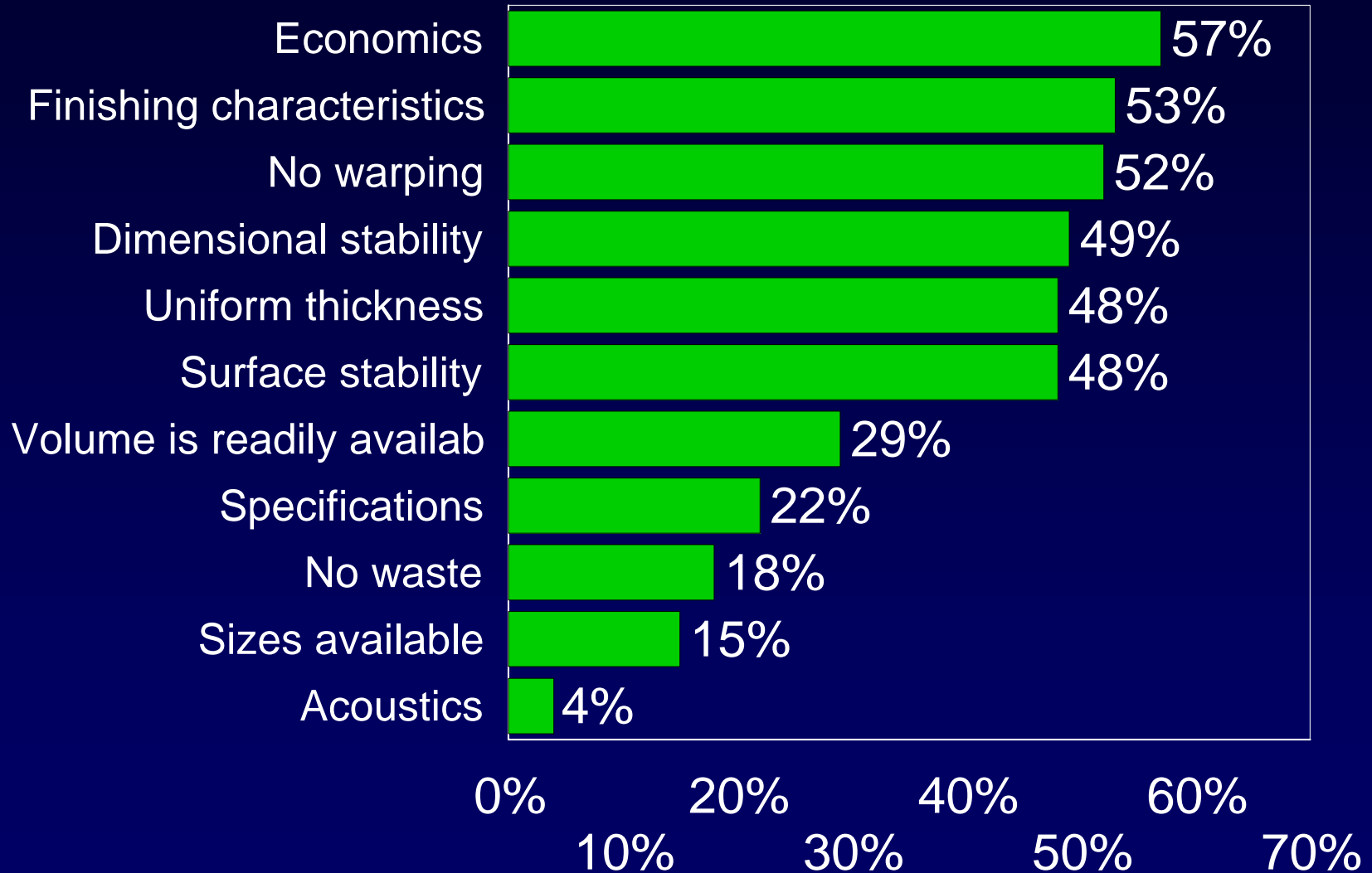
Reasons for Using Particleboard Percentage of Companies Responding (n=92)



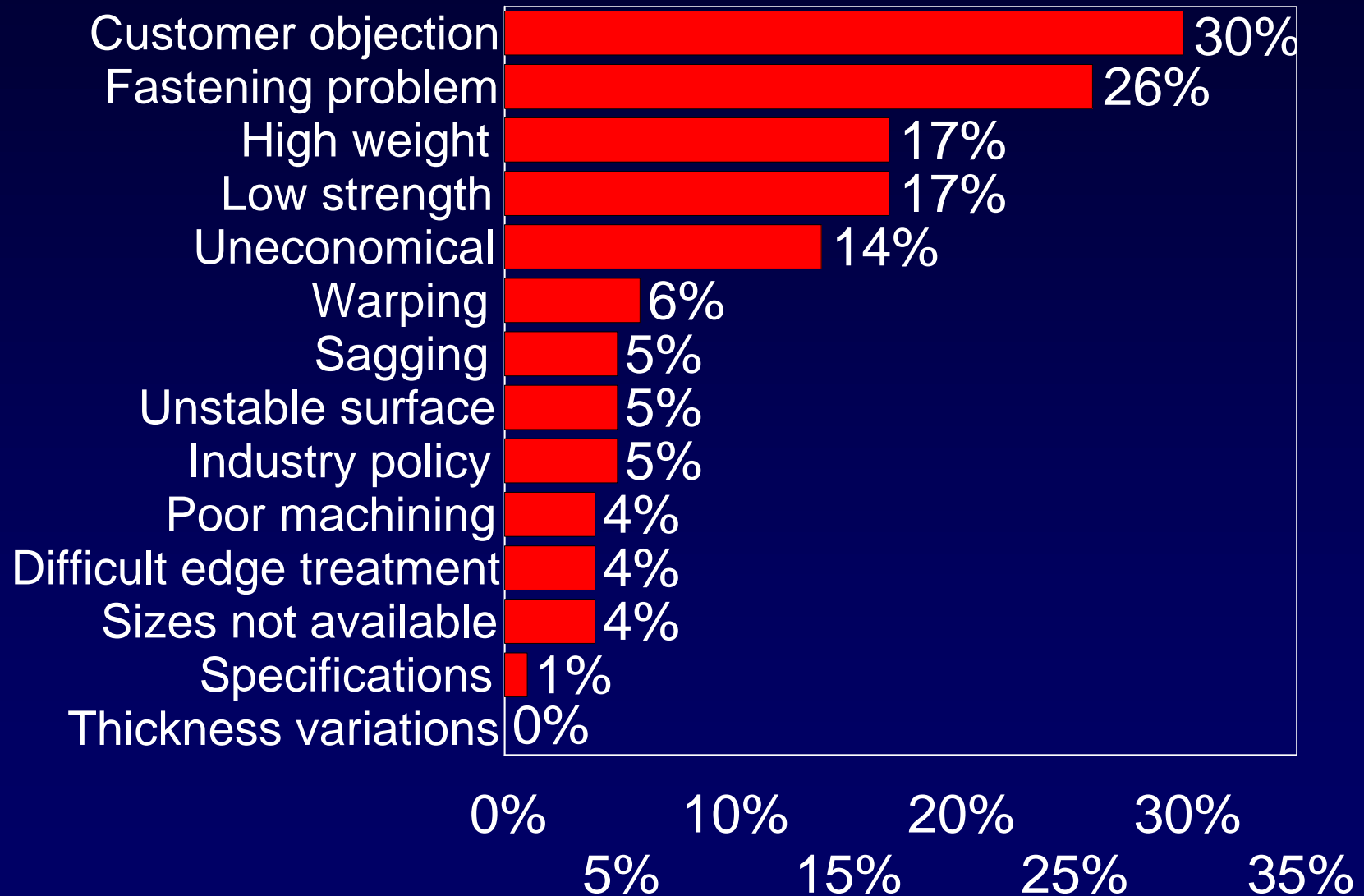
Reasons for Not Using Particleboard Percentage of Companies Responding (n=92)



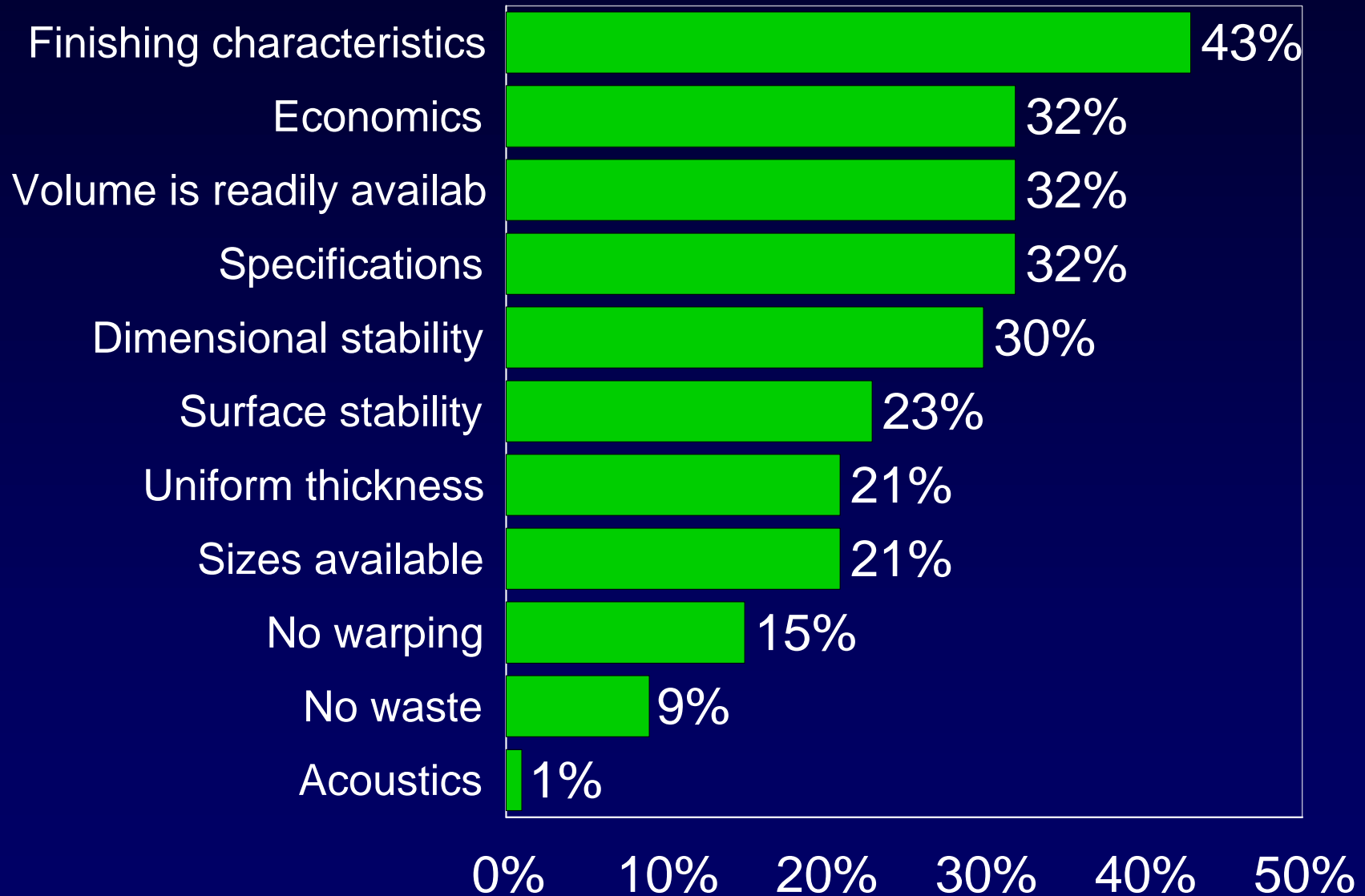
Reasons for Using MDF
Percentage of Companies Responding
(n=95)



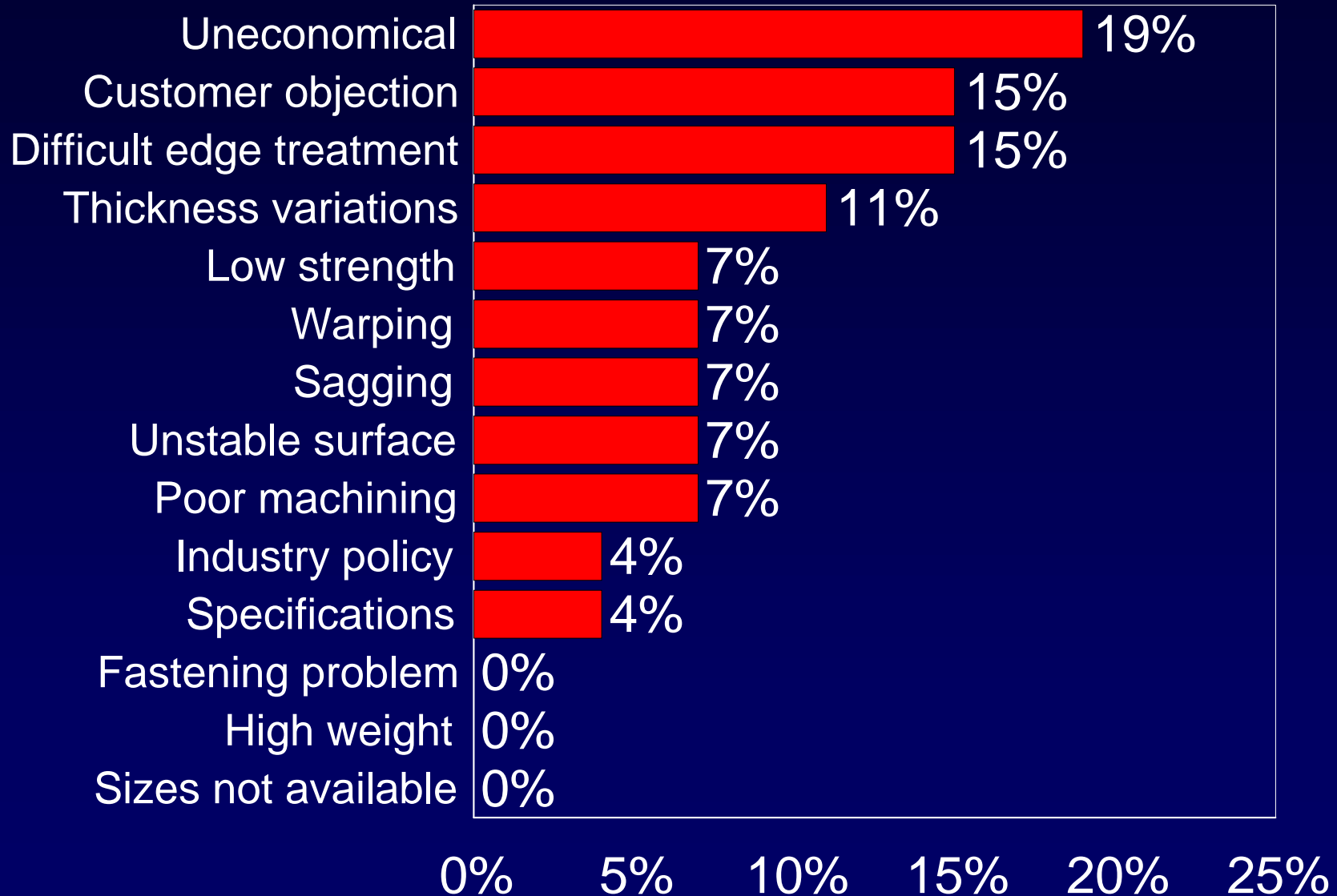
Reasons for Not Using MDF
Percentage of Companies Responding
(n=81)



Reasons for Using Plywood Percentage of Companies Responding (n=155)

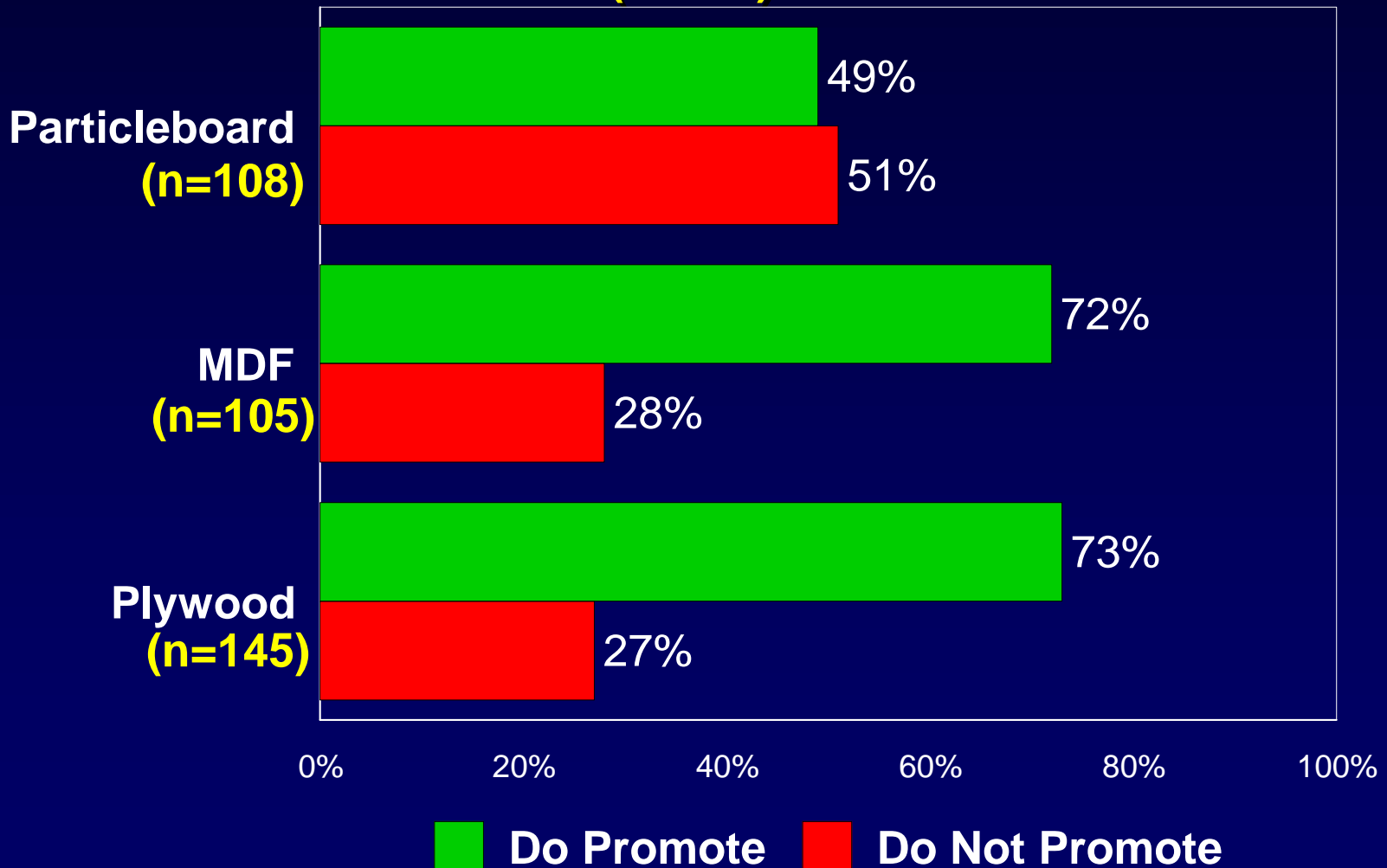


Reasons for Not Using Plywood
Percentage of Companies Responding
(n=27)



Percent of Companies that Actively Promote Particleboard, MDF and Plywood to Customers

(n=194)



SUMMARY

Panel products such as particleboard, medium density fiberboard and plywood are important raw material inputs for the furniture, cabinet and allied industries. Often these products compete for market share in the same application.

This paper identifies the relative importance of panel inputs for six value-added secondary wood manufacturing industries. Respondents indicated the characteristics that encourage or discourage them from using these products.

This information is useful to companies in the secondary industries discussed in the paper because it helps them understand their industry structure. In addition, the information is important to panel suppliers to value-added customers. By better understanding their customer concerns, needs and manufacturing issues, panel suppliers can better serve their customers and compete in the marketplace.



Questions

