

Table of Contents

Abstract.....	i
List of Tables	iv
List of Figures	v
1 Objective	1
2 Introduction	1
3 Past studies on the volume of wood products used in industrial markets	3
3.1 Wood Use in Industrial Markets, 1977	3
3.1.1 Lumber	4
3.1.2 Particleboard.....	4
3.1.3 Plywood.....	5
3.1.4 Veneer.....	5
3.1.5 Medium Density Fiberboard.....	5
3.1.6 Hardboard.....	6
3.2 Structural Panel Use in Industrial Markets, 1998.....	6
3.3 Wood Use Trends in the Pallet and Container Industry: 1992-1999.....	8
4 Research Methods	10
4.1 Survey Methodology.....	10
4.2 Wood Use Volume Estimation Methodology	11
5 Results.....	17
5.1 Volume of Wood Use in U.S. Industrial Markets	19
5.2 Qualification of Wood Use in U.S. Industrial Markets.....	27
6 Limitations and Recommendations	55
References	56
Appendix 1: Description of the primary NAICS industries investigated.....	57
Appendix 2: The phone survey template	78

List of Tables

Table 2.1.	<i>Selected U.S. industrial markets, identified for their potential for wood use (U.S. Bureau of the Census, 1997, 2000).</i>	2
Table 3.1.	<i>Percent volume of all wood products used by high incidence manufacturing industries in 1977 (McKeever and Martens, 1983).</i>	3
Table 3.2.	<i>Lumber use by manufacturing industry, 1977 (McKeever and Martens, 1983).</i>	4
Table 3.3.	<i>Particleboard use by manufacturing industry, 1977 (McKeever and Martens, 1983).</i>	4
Table 3.4.	<i>Plywood use by manufacturing industry, 1977 (McKeever and Martens, 1983).</i>	5
Table 3.5.	<i>Veneer use by manufacturing industry, 1977 (McKeever and Martens, 1983).</i>	5
Table 3.6.	<i>MDF use by manufacturing industry, 1977 (McKeever and Martens, 1983).</i>	6
Table 3.7.	<i>Hardboard use by manufacturing industry, 1977 (McKeever and Martens, 1983).</i>	6
Table 4.1.	<i>List of "lesser-use" NAICS Codes.</i>	11
Table 4.2.	<i>Respondents reported softwood lumber usage in wood kitchen cabinet & countertop manufacturing.</i>	13
Table 4.3.	<i>Wood kitchen cabinet & countertop manufacturing – 1997 value of shipments</i>	14
Table 4.4.	<i>Final estimates of softwood lumber usage for wood kitchen cabinet & countertop manufacturing.</i>	15
Table 4.5.	<i>Total wood products consumption for wood kitchen cabinets & countertops, 1997-2000.</i>	16
Table 5.1	<i>Breakdown of completed surveys by NAICS code.</i>	17
Table 5.2.	<i>Number of wood-using completed surveys by NAICS code and product type.</i>	18
Table 5.3.	<i>Summary total of wood-use quantities, the 20 industrial NAICS codes combined.</i>	21
Table 5.4.	<i>Top ten lumber users among the 20 industrial NAICS codes.</i>	21
Table 5.5.	<i>Top ten structural panel users among the 20 industrial NAICS codes.</i>	22
Table 5.6.	<i>Top ten nonstructural panel users among the 20 industrial NAICS codes.</i>	22
Table 5.7.	<i>Summary wood usage in industrial manufacturing by NAICS code</i>	23
Table 5.8.	<i>Proportion of respondents using pre-cut components for greater than 1/2 of their inputs in 2000.</i>	31
Table 5.9	<i>Softwood Lumber: Change from three years ago</i>	32
Table 5.10.	<i>Softwood Lumber: Expected change three years from now.</i>	33
Table 5.11.	<i>Hardwood Lumber: Change from three years ago</i>	34
Table 5.12.	<i>Hardwood Lumber: Expected change three years from now.</i>	35
Table 5.13.	<i>Softwood Plywood: Change from three years ago.</i>	36
Table 5.14.	<i>Softwood Plywood: Expected change three years from now.</i>	37
Table 5.15.	<i>Hardwood Plywood: Change from three years ago.</i>	38

<i>Table 5.16. Hardwood Plywood: Expected change three years from now.....</i>	<i>39</i>
<i>Table 5.17. OSB: Change from three years ago.....</i>	<i>40</i>
<i>Table 5.18. OSB: Expected change three years from now.....</i>	<i>41</i>
<i>Table 5.19. Particleboard: Change from three years ago.....</i>	<i>42</i>
<i>Table 5.20. Particleboard: Expected change three years from now.....</i>	<i>43</i>
<i>Table 5.21. MDF: Change from three years ago</i>	<i>44</i>
<i>Table 5.22. MDF: Expected change three years from now.....</i>	<i>45</i>
<i>Table 5.23. Breakdown of wood use: softwood and hardwood lumber</i>	<i>46</i>
<i>Table 5.24. Breakdown of wood use: softwood and hardwood plywood</i>	<i>47</i>
<i>Table 5.25. Breakdown of wood use: OSB and particleboard.....</i>	<i>48</i>
<i>Table 5.26. Breakdown of wood use: medium-density fiberboard.....</i>	<i>49</i>
<i>Table 5.27. Percentage of wood product usage where appearance matters.....</i>	<i>50</i>
<i>Table 5.28. Thickness breakdown of lumber usage.....</i>	<i>51</i>
<i>Table 5.29. Softwood plywood usage by treatment type (if any).....</i>	<i>52</i>
<i>Table 5.30. Softwood lumber usage by species breakdown.....</i>	<i>53</i>
<i>Table 5.31. Hardwood lumber usage by species breakdown.....</i>	<i>54</i>

List of Figures

<i>Figure 3.1. Wood used in U.S. manufacturing industries, 1977 (McKeever, 1983).....</i>	<i>3</i>
<i>Figure 3.2. 1998 structural panel use by industry type (Adair, 1999).....</i>	<i>7</i>
<i>Figure 3.3. Volume of structural panels used by various U.S. industrial groups in 1992 and 1998 (Adair, 1999).....</i>	<i>7</i>
<i>Figure 3.4. Frequency of U.S. wood use in the pallet and container industry, 1999 (Bejune, 2001).....</i>	<i>8</i>