University of Minnesota Duluth
Master of Social Work Program

Study of Tobacco Ordinance Compliance in Eight Northeastern Minnesota Counties

Plan B Research Project

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Kristen J. Magnus

Committee Chairperson: Dr. Don Carpenter
Second Reader: Dr. Priscilla Day
Third Reader: Dr. Bud McClure
Kristen J. Magnus  
Executive Summary  
Study of Tobacco Ordinance Compliance in Eight Northeastern Minnesota Counties

Purpose of the Research

The purpose of this research project was to determine the extent to which eight counties in Northeastern Minnesota have been in compliance with their youth access to tobacco ordinances, this having implications for the extent to which local ordinances may help decrease teen smoking. There are no consequences for non-compliance with the statewide minimum standards and no specific reporting requirements for compliance checks. Therefore, the scope of the problem is largely unknown.

Methodology Used

This study is a descriptive study based on the secondary data analysis of tobacco sales to minors in eight Northeastern Minnesota counties. The convenience sample used for this study was obtained from two sets of compliance checks completed in the eight county area during 1999. One set of data were composed of 730 compliance checks completed by the County Public Health Departments and the other data were obtained from FDA compliance checks.

Results obtained

The results of this study indicate that tobacco ordinances governing sales to minors in the eight counties studies are being implemented unevenly. In the total test sales for the eight county area studied there were over three and a half times as many unsuccessful (ordinance compliance) as successful sales (ordinance noncompliance) to minor test purchasers. Minors were able to purchase tobacco in just below 34% of all test sales regardless of age verification. Even when a minor’s age identification was checked,
there were successful sales (ordinance noncompliance) in almost 30% of tobacco test sales to minors and not checking the buyer’s age resulted in 291 more successful sales (ordinance noncompliance) of tobacco to a minor.

From the data obtained from FDA compliance checks, youth were found to be most likely to be able to purchase tobacco during the winter months (December, January, and February), followed by summer (June-August), then fall (September-November), and least likely to be able purchase during the spring (March-May).

Discussion of the Results

The results of this study indicate that tobacco ordinances governing sales to minors in the eight counties studied are being implemented unevenly. Results show that some cities and townships within the eight county test area (most notably Aitkin, Cook, Lake, and Pine Counties) are in compliance with local youth access to tobacco ordinances to a low extent. This finding has implications for the need to find effective enforcement mechanisms of local ordinances.

Limitations of the Study

Data collection was difficult due to the guarded nature of counties in releasing the data. Due to the nature of data collection a convenience sample was used. Consequently, the results of this study cannot be generalized to other counties. Further statistical analysis could be done if the records of public health data were more complete.

Recommendations

In consideration of the finding that tobacco ordinances governing sales to minors in the eight counties studies are being implemented unevenly, this finding has implications for the need for effective enforcement.
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Introduction to Research Topic

The Stop Teen Tobacco Organizing Project (STTOP) was created in 1997 with the goal of decreasing the rate among youth in Northeastern Minnesota who use tobacco products. The STTOP program serves the following eight county area: Aitkin, Carlton, Cook, Itasca, Koochiching, Lake, Pine, and St. Louis.

The objectives of STTOP are to 1) Decrease the number of youth reporting tobacco use as per the Minnesota Student Survey issued to high school students every three years. 2) Reduce the number of times youth are able to purchase tobacco products as determined by compilation of information from local compliance checks. 3) Enactment of strong local ordinances which restrict tobacco sales to minors. 4) Increase community awareness on issues of tobacco use among youth.

By 1998, STTOP had achieved their objective of passing ordinances that restrict tobacco sales to minors in each of the eight identified counties. Many cities and townships within those counties have passed their own ordinances that may or may not be more restrictive than the county ordinance. One of the minimum standards set by the state is the requirement of at least one compliance check per year of all stores who hold tobacco licenses. A compliance check is accomplished when a youth attempts to purchase tobacco for the purpose of determining whether or not a store is obeying the law of not selling tobacco to minors.

The purpose of this research project was to determine the extent to which eight counties in Northeastern Minnesota have been in compliance with the ordinances they have passed, this having implications for the extent to which local ordinances may help decrease teen smoking. There are no consequences for non-compliance with the
statewide minimum standards and no specific reporting requirements for compliance checks. Therefore, the scope of the problem is largely unknown.

Literature Review

It has been shown that tobacco companies target youth (Blum, 1990). The livelihood of the tobacco companies depend on maintaining the product support of more than 50 million Americans including the more than 1.2 million teenagers who take up smoking each year. Appeals to freedom, wealth, glamour, athletic prowess and sexual attractiveness tends to undermine public health efforts (p.965).

In 1991, approximately 255 million packs of cigarettes were sold illegally to minors nationwide (Wildy, 1995). The prevalence of tobacco use among adolescents continues to increase. The ease with which underage youth can purchase cigarettes over the counter and at vending machines has been well documented at anywhere between 34 to 91% of stores and 79 to 100% of vending machines (p. 625).

A study by Rheinstein and McGinnis (1995) shows that if people do not begin to smoke as a teenager it is unlikely that they will ever do so. It is estimated that the average teenage smoker starts at 14½ years of age and becomes a daily smoker by age 18. Their study also shows that more than 80% of all adult smokers had tried smoking by their 18th birthday and more than half of them had already become regular smokers by that age (p. 1205). Children in this study also greatly underestimate the likelihood that they will become addicted to tobacco products. Although only 5% of daily smokers surveyed in high school anticipated smoking five years later, close to 75% were smoking seven to nine years later. This same study revealed that approximately two-thirds of
adolescents who smoked said they wanted to quit and 70% said they would not start smoking if they could make that choice again (p. 1207).

The following sections identify areas in which limiting youth access to tobacco has been attempted:

*Federal Law Enforcement*

Federal law (the Synar Amendment) enacted in July 1992 requires that all states who receive federal funds for the prevention and treatment of substance abuse to have and enforce laws prohibiting the sale or distribution of tobacco to minors. The state must conduct annual statewide inspections of over-the-counter tobacco outlets and vending machines to assess the statewide rate of illegal tobacco sales to minors. It must also develop a plan to decrease the illegal sales rate to (less than or equal to) 20% over several years (Morbidity and Mortality Weekly Report, 1996, p. 1095).

In an effort to identify where and how minors acquire tobacco products, the Federal Center for Disease Control and Prevention created a Youth Risk Behavior Survey. In 1995, this survey was administered to 2,227 sixth through eighth grade students in 53 schools in North Carolina. The 22.8% of students who had smoked during the previous 30 days identified their tobacco source(s) as the following: 32.1% borrowed, 16.9% purchased from a store, and 3.9% has purchased from a vending machine (Gratias, et al, 2000, p. 452). The point to be obtained from the survey is that youth continue to have access to tobacco.

*Community Education*

A report in 1992 by the Inspector General, Department of Health and Human Services, concluded that active enforcement of tobacco distribution laws are rare and
usually the result of local initiatives supported by the community. Despite the fact that local ordinances can cite stores for selling tobacco to minors, this method of enforcement has some drawbacks. Introducing and passing legislation or encouraging local law enforcement to enforce existing laws in an insurmountable task and can be very expensive. This may not be feasible in many communities and, therefore, a retailer-oriented intervention may be the only option for some communities (Wildey, et. al, 1995, p. 625).

The purpose of the Wildey study was to assess the sustained effects of an education intervention to reduce teens' access to tobacco. Wildey studied an educational intervention provided by a group calling themselves T.R.U.S.T. (Teens and Retailers United to Stop Tobacco). The intervention consisted of providing merchants with direct education in a face-to-face contact with repeat visits, close proximity between T.R.U.S.T. headquarters and intervention stores, training videotapes for sales clerks, and support. T.R.U.S.T. also positively reinforced retailers compliant with tobacco sales laws through paid newspaper advertisements. This study found that one year of intensive education decreased illegal sales to minors by 36% and was maintained six months following the conclusion of the intervention. The authors contend that the process of reducing illegal sales of tobacco to minors includes: 1) documentation of the local problem 2) community education 3) retailer education and 4) retailer education enforcement (i.e. through media coverage). Another possibly strategy for reducing illegal tobacco sales to minors may include policy change. Adoption of local ordinances requiring vendor licensing fees to support continued education and enforcement by local health departments may be needed if communities are not able to completely address the problem through education alone.
The authors conclude that this study should be encouraging for communities where active law enforcement is not an option.

*FDA Regulations -*

On August 28, 1996, the Food and Drug Administration (FDA) issued regulations that prohibit sales of tobacco to persons under the age of 18 and requires retailers to request photographic identification to verify the age of all persons younger than 27 years who request tobacco. The regulations required the banning of vending machines and self-service displays except in facilities where only adults are permitted. Further, it prohibits the sales of single cigarettes and packages with less than 20 cigarettes and eliminates free samples of cigarettes and smokeless tobacco products. The effective date for the provisions prohibiting tobacco sales to minors and requiring photographic identification was February 28, 1997. The effective date for the provisions affecting sales through vending machines, self-service displays, single cigarette sales, and distribution of free samples was August 28, 1997 (Clark, et. al., 2000, p. 729).

By December 1999, the FDA completed more than 150,000 compliance checks in 43 states and territories (Clark, 2000, p. 730). Agents trained by the FDA documented the following information: 1) outcome of the check (sale or no sale), 2) the type of establishment visited (convenience store, convenience plus gas station, gas station, drugstore, general merchandise, supermarket, tobacco store, or other), 3) the date and time of the check, 4) the sex of the store clerk, 5) the type of the tobacco the minor attempted to buy (cigarettes or smokeless tobacco), 6) the minor’s ID code (indicating age and gender of the minor), 7) whether the minor was asked for proof of age, and 8) whether the minor carried a valid ID card. The minor was not allowed to alter his/her
appearance to look older and was instructed not to lie about their age (Clark, 2000, p. 730).

Clark’s results showed that the older age of the minor was associated with illegal tobacco sales, with the odds of buying increasing with each year of age. Girls were more likely to be able to successfully buy than were boys, and female clerks were more likely to sell than were male clerks. Sales to minors were significantly higher after 5 p.m. or on Saturdays (2000, p. 731). The authors suggest that this may indicate that clerks who are on duty during these times are younger than daytime or weekday clerks and are more inclined to sell tobacco products to their peers (2000, p. 731).

In 10% of the compliance checks in which clerks asked for proof of age, tobacco was still sold to minors. Clark suggests this may indicate an incomplete understanding of the “carding” or age-verification process (2000, p. 731). The process of “carding” requires three actions by the clerk: requesting an ID card, inspecting the card, and calculating the age of the buyer. Clerks may sell tobacco even after requesting proof of age because they cannot calculate age eligibility from a date of birth. This may indicate a lack in training programs for clerks. Often clerks typically learn that they must request an ID card and know how to spot a fake one. However, they may not be taught how to calculate age eligibility once a card is presented.

On March 21, 2000, the Supreme Court ruled that the FDA lacked the authority to regulate tobacco as customarily marketed. Due to this decision, the FDA will no longer be conducting compliance checks. Therefore, other efficient compliance check programs are needed to conserve limited resources, while reducing illegal sales of tobacco to minors.
Taxation of Tobacco -

The fact that it is illegal for youth to possess tobacco products may send the implied message that kids should not be smoking, but it is an acceptable adult activity. According to a report by Glanz (1996), this can make smoking even more attractive to youths. Glanz suggests that to stop youths from smoking it is necessary to provide an economic disincentive to tobacco companies, and that taxing tobacco heavily will discourage smoking in the general population and will reduce smoking among youth as well (p. 156). As of July 2000, the state of Minnesota charged $0.48 tax per pack of cigarettes. This ranks Minnesota the 20th highest cigarettes tax rate with Alaska and Hawaii charging the highest at $1.00 per pack and Virginia charging the least $0.025 per pack (Smith, p. 17).

Data from 1997 state and federal revenues from tobacco sales to minors indicates that youth generate $222 million in federal tobacco tax revenues, $293 million in state tax revenues, and $480 million in tobacco company profits each year. The authors of one study feel that these revenues from tobacco sales to youths could be used to enforce laws prohibiting the sale of tobacco to minors (DiFranza and Librett, 1999, p. 1106).

Creating a “non-smoking” social norm -

Little by little the social norm has been changing to an importance of clean air (Blum, 1990, p. 965). A growing body of evidence indicates that second-hand smoke, or environmental tobacco smoke (ETS) is harmful. In a time when businesses are desperately seeking ways to contain the costs they must pay for health insurance for their employees, the knowledge of the effects of ETS are important.
It has only been since 1989 that hospitals in Minnesota have been smoke free. On August 9, 1997, Executive Order 13058 established a smoke-free environment for Federal employees and members of the public visiting or using Federal facilities. The order also encouraged agencies to establish programs to help employees stop smoking by expanding access to smoking cessation programs. As indicated in the American Family Physician, smoking cessation programs for the individual patient cannot truly succeed without both workplace smoking bans and multimedia counter-advertising strategies that weaken the influence of the tobacco industry and reinforce the physician's office-based efforts (Blum, 1990, p. 966).

Significance of Topic to the Social Work Profession

Social workers have a long-standing interest in seeing social and health policies implemented that are consistent with the profession's value system and code of ethics. The issue of tobacco use is of importance to the social work profession in that a growing body of evidence cites tobacco use by children and youth as a detriment to their growth and physical health and also to the physical health of adults. Unfortunately, the mere fact that a law is enacted does not always mean it will be implemented as planned. The purpose of this research was to identify the extent to which ordinances restricting tobacco sales to youth in have been followed in eight Northeastern Minnesota counties.
Research Question

The research questions for this project were:

Among the eight county area served by STTOP, to what extent are ordinances requiring compliance checks of tobacco sales to youth being implemented?

In examining the data for 1999, to what extent are the outcomes of tobacco compliance checks related to: the verification of the buyer’s (minor) age, the time of the purchase attempt, the age of the buyer, gender of the buyer, the store type of the tobacco retailer, and gender of the store clerk?

Methods

Population and Sample

The population for this study was composed of all stores with tobacco licenses in the counties served by the STTOP program. These counties include: Aitkin, Carlton, Cook, Itasca, Koochiching, Lake, Pine, and St. Louis.

Each ordinance specifies what authority within the county is responsible for completing compliance checks. County health departments are provided state money in order to fund the collection countywide compliance check data at the end of each year. However, there is no provision of consequences for compliance check data that is not provided to the health department.

The convenience sample used for this study was composed of tobacco-licensed stores from which data were available that had been generated from compliance checks by each of the eight counties served by STTOP.
Research Design

This study is a descriptive study based on the secondary data analysis of data on tobacco sales to minors in eight Northeastern Minnesota counties.

Operational Definitions and Data Collection

*Tobacco ordinance compliance* is defined as a county completing all procedures as identified in their ordinance. Part of this definition includes whether or not a particular store (e.g. Hermantown Wal-Mart or Duluth Cub Foods, etc.) or type of store (e.g. a gas station, a liquor store, a supermarket, etc.) is obeying the ordinance requirement of not selling tobacco to minors. *Tobacco ordinance compliance* also means that compliance check data have been collected by the county public health department and subsequently forwarded to the Minnesota Department of Health.

At a minimum, the state of Minnesota requires one compliance check per year. Each of the eight counties studied have their own ordinance as well as some cities and townships within each county. Because of this variance among counties the following information is provided to complete the operational definition of *tobacco ordinance compliance* and to indicate whether or not statewide minimum standards have been met.

- Aitkin County – Aitkin County has one countywide ordinance that requires one compliance check per year for each tobacco retailer. In 1999 there were no compliance checks completed in the following cities/townships: Hill City, Macville Township, McGrath City, Palisade, and Salo Township.

- Carlton County – The Carlton County ordinance requires only one compliance check per year. Moose Lake, Barnum, and Cloquet each have their own ordinance. The Cloquet ordinance requires two compliance checks of each tobacco retailer per year.
In 1999, there were no compliance checks completed in Moose Lake or Barnum. Starting in 2001, Carlton County intends to complete two countywide compliance checks per year.

- **Cook County** – Grand Marais is the only city within Cook County that holds its own ordinance. Cook County had a total of 18 tobacco retailers in 1999, all of which were checked. This does not include the Grand Portage Reservation which is excluded from the ordinance. Nineteen ninety nine was the first year Cook County completed compliance checks and six stores sold tobacco to minors for a countywide noncompliance rate of 54%. No fines or citations were imposed, but the information was collated by the Public Health Department. During the 2000 compliance checks, stores who sold for the second time were fined. However, first time offenders were not fined.

- **Pine County** – Pine County only has one countywide ordinance which requires one check per year. All areas were checked in 1999.

- **Koochiching County** – International Falls is the only city within Koochiching County that has its own ordinance. In 2001, Koochiching County intends to increase to two countywide compliance checks per year utilizing money from the Minnesota tobacco lawsuit settlement.

- **Lake County** – Two Harbors is the only city within Lake County to have it’s own ordinance. Two Harbors was the only area within Lake County that was checked in 1999.

- **Itasca County** – Itasca County checked 57 tobacco retailers in 1999. The cities of Grand Rapids, Deer River, Squaw Lake, Nashwauk, and Keewatin have their own
ordinances, but did not complete compliance checks in 1999. Itasca County Public Health works with the Sheriff’s Department and the Itasca Heart Project (IHP) to complete compliance checks. The Itasca Heart Project began in 1989 after two independent studies found high rates of cardiovascular disease in Itasca County. It is a collaboration of local hospitals and physicians along with public health. The mission is to reduce the risk of heart disease among residents and target populations of Itasca County. Some of their activities include heart disease risk factor screenings, tobacco prevention education, cessation, and nutrition education. All of the ordinances in Itasca County require one compliance check per year. A team of four (one officer, a public health or IHP staff member, and two youth) individuals work together to complete the checks.

- **St. Louis County** – The following cities/townships in St. Louis county have their own youth access to tobacco ordinance: Babbitt, Biwabik, Breitung Township, Buhl, Chisholm, Duluth, Ely, Embarrass Township, Eveleth, Floodwood, Gilbert, Hermantown, Hibbing, Kelsey Township, Mountain Iron, Orr, Portage Township, Tower, and Virginia. In 1999, compliance checks were completed in all cities and townships expect for Portage and Bassett townships. In 2000, Bassett was taken over by the St. Louis County ordinance and is now in compliance. Portage township, however, continues to be out of compliance.

**Tobacco Check Protocol**

The tobacco compliance checks used in this study were subject to the following protocol:

- The minor was between 15 and 17 years old.
• The minor did not attempt to alter his or her appearance so as to appear older or younger than their actual age.
• The minor could not lie about his or her age. If asked, the minor was to answer all questions honestly.
• The minor carried a government-issued photo ID and presented it to the clerk when requested.
• The minor entered the retailer and asked the clerk for a specific tobacco product type.
• The minor was to abandon the purchase attempt if they knew anyone in the store.
• Upon leaving the store, the minor was to go immediately to the car and give the details of the purchase attempt to the adult in order to fill out a standardized data form.

Data collection occurred between January and March 2001 and were obtained from two sources: 1) county public health departments, 2) Food and Drug Administration records. The researcher obtained the public health data by contacting the county public health department and requesting summary reports of compliance check data. The FDA data were obtained through the Minnesota Department of Health.

Data Analysis

Descriptive statistics were utilized to display the variation in total successful tobacco sales among the eight counties and the three variables of attempted time of sale, and age and gender of the buyer (minor). Cross tabulations and chi square were used to explore relationships among variables.

Results

This research was guided by two major questions: 1) To what extent are ordinances requiring compliance checks of tobacco sales to youth in eight counties being implemented? 2) What specific trends are identifiable in the ten compliance factors evaluated during compliance checks? The results are reported from the eight public health departments and data from the FDA.
Results from the Public Health Department Data

Total Sales to Minors in the Eight Counties

As can be seen from Table 1, among the eight counties, Itaska had the highest percentage of unsuccessful tobacco sales to a minor in 1999 (95%), followed by Koochiching (84%), St. Louis (83%), and Carlton (76%). This means that these four counties were most successful in attaining store compliance with the tobacco ordinance during 1999 regardless of age verification. The remaining counties of Pine, Cook, Lake, and Aitkin fell off rather sharply in percentage of test store compliance with Aitkin having the lowest level of compliance (35%). In terms of total sales for the eight counties there were over three and a half times as many unsuccessful (ordinance compliance) as successful sales (ordinance noncompliance) to minor test purchasers.

Table 1 Total Successful and Unsuccessful\(^1\) Test Sales of Tobacco To a Minor in Eight Minnesota Counties in 1999 Made Both With and Without Age Verification.

<table>
<thead>
<tr>
<th>County</th>
<th>Successful N</th>
<th>%</th>
<th>Unsuccessful N</th>
<th>%</th>
<th>Total N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Itaska</td>
<td>3</td>
<td>5</td>
<td>54</td>
<td>95</td>
<td>57</td>
</tr>
<tr>
<td>Koochiching</td>
<td>5</td>
<td>16</td>
<td>27</td>
<td>84</td>
<td>32</td>
</tr>
<tr>
<td>St. Louis</td>
<td>81</td>
<td>17</td>
<td>386</td>
<td>83</td>
<td>467</td>
</tr>
<tr>
<td>Carlton</td>
<td>13</td>
<td>24</td>
<td>41</td>
<td>76</td>
<td>54</td>
</tr>
<tr>
<td>Pine</td>
<td>20</td>
<td>33</td>
<td>41</td>
<td>67</td>
<td>61</td>
</tr>
<tr>
<td>Cook</td>
<td>7</td>
<td>54</td>
<td>6</td>
<td>46</td>
<td>13</td>
</tr>
<tr>
<td>Lake</td>
<td>5</td>
<td>56</td>
<td>4</td>
<td>44</td>
<td>9</td>
</tr>
<tr>
<td>Aitkin</td>
<td>24</td>
<td>65</td>
<td>13</td>
<td>35</td>
<td>37</td>
</tr>
<tr>
<td>Total</td>
<td>158</td>
<td></td>
<td>572</td>
<td>71.5</td>
<td>730</td>
</tr>
<tr>
<td>Mean</td>
<td>19.8</td>
<td></td>
<td>71.5</td>
<td></td>
<td>66.25</td>
</tr>
</tbody>
</table>

\(^1\)“Unsuccessful sales” data indicate the extent of compliance with ordinances restricting youth access to tobacco.
Total Sales Subsequent to Age Checks

One indicator of success of the tobacco compliance ordinance is the extent of unsuccessful sales subsequent to age verification. Table 2 indicates that among the seven counties, following the presentation of proof of age, minors were still able to purchase tobacco nearly 30% of the time. Itaska county store clerks were most likely to deny minors tobacco after verification of age (90%), followed by Koochiching (86%), St. Louis (80%), Carlton (79%), and Pine (75%). Clerks in Lake county were most likely to look at a minor’s ID and sell tobacco anyway (43%).

Table 2 Total Successful and Unsuccessful Sales to Minors Involving Sales Subsequent to Age Verification Only.

<table>
<thead>
<tr>
<th>County</th>
<th>N</th>
<th>Successful</th>
<th></th>
<th>Unsuccessful</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Itaska</td>
<td>2</td>
<td>10</td>
<td>18</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>Koochiching</td>
<td>1</td>
<td>14</td>
<td>6</td>
<td>86</td>
<td></td>
</tr>
<tr>
<td>St. Louis</td>
<td>47</td>
<td>20</td>
<td>191</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>Carlton</td>
<td>6</td>
<td>21</td>
<td>23</td>
<td>79</td>
<td></td>
</tr>
<tr>
<td>Pine</td>
<td>9</td>
<td>25</td>
<td>27</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>Aitkin</td>
<td>16</td>
<td>55</td>
<td>13</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Lake</td>
<td>4</td>
<td>57</td>
<td>3</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>*Cook</td>
<td></td>
<td>=</td>
<td>=</td>
<td>=</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>85</td>
<td>=</td>
<td>281</td>
<td>=</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>12.1</td>
<td>28.9</td>
<td>40.1</td>
<td>71.1</td>
<td></td>
</tr>
</tbody>
</table>

*Insufficient data for Cook County which was not included in the calculations.
Comparison of Unsuccessful Sales With and Without Age Verification

As can be seen in Table 3 comparing unsuccessful tobacco sales (ordinance compliance) by two different methods, there is a 4.8 mean percent increase in unsuccessful sales when using the age verification only count. Not checking the buyer’s age resulted in 291 more successful sales (ordinance noncompliance) of tobacco to a minor.

Table 3 Total Unsuccessful Tobacco Sales For Eight Counties (Both With and Without Age Verification) and Unsuccessful Sales With Age Checks Only.

<table>
<thead>
<tr>
<th>Sales Checking Method</th>
<th>N</th>
<th>Mean</th>
<th>Mean percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>With age checks only</td>
<td>281</td>
<td>40.1</td>
<td>71.1</td>
</tr>
<tr>
<td>Both with &amp; without age check</td>
<td>572</td>
<td>71.5</td>
<td>66.3</td>
</tr>
<tr>
<td>Difference</td>
<td>291</td>
<td>31.4</td>
<td>4.8</td>
</tr>
</tbody>
</table>

Total Sales Among Store Types

Table 4 indicates that among the eleven types of stores, minors were most likely to be able to purchase tobacco at a drug/pharmacy (44% of attempts), followed by a general merchandise store (35% of attempts) and least likely to be able to purchase tobacco at a tobacco/smokeshop (12%), gas-only stations (14%), and liquor stores (18%). Therefore, tobacco sales to minors occurred more often at a drug/pharmacy or general merchandise store than at a tobacco/smokeshop, gas-only station, or liquor store.
Table 4  Total Successful and Unsuccessful Test Sales of Tobacco To a Minor in 1999 in Eight Minnesota Counties - By type of store regardless of age verification.

<table>
<thead>
<tr>
<th>Type of Store</th>
<th>N</th>
<th>%</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobacco/Smokeshop</td>
<td>1</td>
<td>12</td>
<td>7</td>
<td>88</td>
</tr>
<tr>
<td>Gas</td>
<td>2</td>
<td>14</td>
<td>12</td>
<td>86</td>
</tr>
<tr>
<td>Liquor</td>
<td>11</td>
<td>18</td>
<td>49</td>
<td>82</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
<td>19</td>
<td>29</td>
<td>81</td>
</tr>
<tr>
<td>Convenience</td>
<td>3</td>
<td>23</td>
<td>10</td>
<td>77</td>
</tr>
<tr>
<td>Bar/Restaurant</td>
<td>45</td>
<td>23</td>
<td>147</td>
<td>77</td>
</tr>
<tr>
<td>Convenience/gas</td>
<td>46</td>
<td>24</td>
<td>145</td>
<td>76</td>
</tr>
<tr>
<td>Supermarket/Grocery</td>
<td>17</td>
<td>31</td>
<td>38</td>
<td>69</td>
</tr>
<tr>
<td>General Merchandise</td>
<td>6</td>
<td>35</td>
<td>11</td>
<td>65</td>
</tr>
<tr>
<td>Drug/Pharmacy</td>
<td>4</td>
<td>44</td>
<td>5</td>
<td>56</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>142</td>
<td></td>
<td>453</td>
<td></td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td>14.2</td>
<td>24.3</td>
<td>45.3</td>
<td>75.7</td>
</tr>
</tbody>
</table>

Total Sales Based on Age of the Minor

Table 5 indicates the minor’s success in purchasing tobacco as related to the minor’s age. Seventeen-year-old buyers were successful in purchasing tobacco in 36% of the test sales compared with 16-year-old buyers purchasing in 24% of the attempts, and 15-year-old buyers purchasing tobacco in only 6% of the attempts. Therefore, 17-year-old buyers were able to purchase tobacco 30% more often than 15-year-old buyers.
Table 5 *Comparison between Successful and Unsuccessful Test Sales of Tobacco to Minors based on age of the minor regardless of age verification.*

<table>
<thead>
<tr>
<th>Age</th>
<th>Successful</th>
<th></th>
<th>Unsuccessful</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>15 years old</td>
<td>5</td>
<td>6</td>
<td>79</td>
<td>94</td>
</tr>
<tr>
<td>16 years old</td>
<td>107</td>
<td>24</td>
<td>339</td>
<td>76</td>
</tr>
<tr>
<td>17 years old</td>
<td>46</td>
<td>36</td>
<td>83</td>
<td>64</td>
</tr>
<tr>
<td>Total</td>
<td>158</td>
<td>50</td>
<td>501</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>52.7</td>
<td>22</td>
<td>167</td>
<td>78</td>
</tr>
</tbody>
</table>

**Total Sales Based on Gender of the Minor**

Table 6 shows that female minors were able to purchase tobacco in 30% of the test sales. Male minors were only able to purchase tobacco in 19% of test sales.

Table 6 *Comparison between Successful and Unsuccessful Test Sales of Tobacco to Minors based on the gender of the minor and regardless of age verification.*

<table>
<thead>
<tr>
<th>Gender</th>
<th>Successful</th>
<th></th>
<th>Unsuccessful</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Female</td>
<td>79</td>
<td>30</td>
<td>183</td>
<td>70</td>
</tr>
<tr>
<td>Male</td>
<td>78</td>
<td>19</td>
<td>325</td>
<td>81</td>
</tr>
<tr>
<td>Total</td>
<td>157</td>
<td>19</td>
<td>508</td>
<td></td>
</tr>
<tr>
<td>% of difference</td>
<td>11</td>
<td></td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>78.5</td>
<td>24.5</td>
<td>254</td>
<td>75.5</td>
</tr>
</tbody>
</table>
Results based on Data from the FDA

Upon examining the data received from the FDA compliance checks a significant association among the variables studied was found in only one case: frequency of sale to a minor and the time of year for which the tobacco was sold. As seen in table 7, youth were found to be most likely to be able to purchase tobacco during the winter months (December, January, and February), followed by summer (June-August), then fall (September-November), and least likely to be able purchase during the spring (March-May) \(X^2(3), p=0.002\).

The following variables were tested and found to have no significance for frequency of selling tobacco to a minor: 1) the type of store, 2) the time of day the purchase was attempted, and 3) the gender of the clerk.

Table 7 Crosstabulation of Tobacco Sales Frequency by Time of Year

<table>
<thead>
<tr>
<th></th>
<th>Spring, Summer, Fall, Winter</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Winter</td>
<td>Spring</td>
</tr>
<tr>
<td>Unsuccessful sale to minor</td>
<td>25</td>
<td>21</td>
</tr>
<tr>
<td>Successful sale to minor</td>
<td>23</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>48</td>
<td>24</td>
</tr>
</tbody>
</table>

Chi-Square Test

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>14.949*</td>
<td>3</td>
<td>.002</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>14.566</td>
<td>3</td>
<td>.002</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>8.449</td>
<td>1</td>
<td>.004</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>214</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.62.
Discussion

Interpretation of Results/Implications for Practice

The results of this study indicate that tobacco ordinances governing sales to minors in the eight counties studied are being implemented unevenly. Results show that some cities and townships within the eight county test area (most notably Aitkin, Cook, Lake, and Pine Counties) are in compliance with local youth access to tobacco ordinances to a low extent. This finding has implications for the need to find effective enforcement mechanisms of local ordinances.

The only significant association among the variables studied was found in the frequency of sale to a minor and the time of year for which the tobacco was sold. One possibility for the increased likelihood for youth to be able to purchase tobacco in the winter may be due to the assumption of the tobacco retailers that compliance checks cannot occur while the test purchasers are in school and, therefore, the retailers may become more relaxed during this season. Tobacco retailers might also assume that compliance checks would not occur during the winter months due to the large number of seasonal businesses being closed. A possibility for the increased likelihood of youth’s ability to purchase tobacco during the summer is the assumed increase in youth store clerks.

In consideration of the finding that even with age identification verification sales are still made almost 30% of the time there would seem to be a need for educating clerks on how to assess age identification card authenticity and ID information. This is particularly important for tobacco retailers such as drug/pharmacies and general merchandise stores whose business does not solely come from selling a product that can be purchased only at
a legal age. It might be assumed that the low occurrence of tobacco sales to minors at liquor stores may be due to the legal age of liquor purchases. Most liquor stores require buyers to be at least 21 years of age in order to enter their establishments. Similarly, due to the nature of their business, tobacco/smokeshops seem most likely to be familiar with laws regarding legal age of purchase.

It is interesting to compare the similarity between the results of the current study and a study by Clark, 2000, (previously cited) which examined 150,000 FDA compliance checks from 43 states. The results of that study showed that the older age of the minor was associated with illegal tobacco sales and that female youth were more likely than males to be successful at purchasing tobacco illegally. It was found in 10% of the compliance checks in which the clerk asked for identification of age, they still sold to minors. In the current study it was found that 29% sold after a minor’s age identification was checked. It was concluded in the Clark study as well as the current study that the ability for underage youth to purchase tobacco even after providing identification of their age may be due to many reasons. One assumption is that clerks may be taught how to spot a fake ID, yet are not taught how to calculate age from a birthdate. Many clerks are under the incorrect assumption that a minor would not provide his or her own ID if he or she is not of legal age to purchase.

Limitations of the Study

Further statistical analysis could be done if the records of public health data were more complete. Data collection was difficult due to the guarded nature of counties in releasing the data. St. Louis County was the most open with their data claiming it is public record. Cook County would not release the names of the stores that sold to minors.
but did provide the general information regarding the type of store and time of sale. Carlton County handled the request for information similarly and required a written request for the data with a description of the purpose for its use. Lake County was open to providing the information but, due to numerous staff changes within the past year, it was unclear the extent to which their files were complete. Aitkin, Pine, Koochiching, and Itasca Counties provided all of their available information but requested that specific identifying data be kept confidential.

Due to the nature of data collection a convenience sample was used. Consequently, the results of this study cannot be generalized to other counties.

Conclusions and Recommendations for Future Research

Follow up research to this study could look at the comparison between cities and townships complying with local youth access ordinances and youth reporting the ability to purchase tobacco. Youth reporting statistics can be found on the Minnesota Student Survey which is conducted every three years with the next survey results available in the fall of 2001. Comparing local student opinions from this survey with data on ordinance compliance may help to determine whether or not the presence of compliance checks deters youth from attempting to purchase tobacco. However, a limitation of this kind of study would be the current extent of incomplete data held by the county public health departments and in some cases their unwillingness to make this type of data available for research purposes. Therefore, it may be important to study the reason for the lack of enforcement of the ordinance.
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