

**FIRE AND THE POOR: IDENTIFYING AND ASSESSING COMMUNITY RISK
AND INTERVENTION STRATEGIES**

Leading Community Risk Reduction

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ABSTRACT

Over the last five years the Shreveport Fire Department had seen a steady increase in the number of fire deaths, injuries, and property damage in residences where the occupants were living below the poverty line and where the structures were located in socioeconomically depressed areas of the community.

The problem was the number of fire deaths, injuries, and property damage primarily affected individuals and families living near or below the poverty line in predominately socioeconomically depressed areas of the community.

The purpose of this applied research paper was to identify fire risk factors that affect the poor, their impact on the Shreveport community, and to identify present and future risk reduction measures to minimize fire occurrence in these instances.

The research project employed descriptive research methodologies and answered the following questions:

1. What risk factors contribute to fire related deaths, injuries, and property damage where the occupants are considered poor?
2. Are risk factors associated with the increased occurrence of fire more prevalent in demographically lower income areas of Shreveport than others?
3. What risk reduction measures are the Shreveport Fire Department currently taking and planning in the future to reduce and minimize fire deaths, injuries, and property damage to the poor?

The procedures for this research paper included a literature review, survey, and an interview with a fire prevention specialist who deals with the issue of fire and the poor in the Shreveport community.

The results were that poor individuals and/or families living in conditions at or near the poverty line and in socioeconomically depressed areas, when compared to other social groups, faced an increased number of risk factors associated with the occurrence of fire. These risk factors, such as leaving children unattended because of an inability to afford child care, were most often related to social conditions and not just being poor.

Based on this study, recommendations were for fire departments to: assess and identify their community's risk for occurrences of fire and the poor; to utilize and develop programs that target high fire risk factors that affect the poor; and to build coalitions and partnerships with both government and civic organizations to make fire prevention a primary concern to those areas most affected.

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INTRODUCTION

At the end of 2003 two young boys lost their lives in a house fire that consumed a two-story structure and swept through their residence with the ferocity of a freight train. Although most of the other people staying in the home were able to escape unharmed by jumping out of a second-floor window, the two boys were afraid of heights, and after briefly appearing at the window they scorned family member's screams and pleas to jump and retreated back into the home.

Most firefighters can tell you, that during a fire, children often will seek comfort in familiar surroundings. When the body of the oldest child was found, the nine year old was only a few feet from the open window and was curled up on his bed with a stuffed animal. A few feet further down the hallway, the six year old was found in an adjacent bedroom.

Following the fire, during the investigations portion it was determined that there were 14 people from three families living in the home at the time of the fire. Overcrowding and inattentiveness were listed as possible contributing factors to the fire. Unfortunately, in Shreveport, this scene was becoming all too familiar to primarily socioeconomically depressed areas that suffered the brunt of fires and the resulting deaths, injuries, and property damage.

As fire claimed the life of another person with similar social and economic factors just four months later, there appeared to be a pattern and certain demographic component of the community that was suffering because of fires more than others: the poor.

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BACKGROUND AND SIGNIFICANCE

The city of Shreveport is a diverse community and has a historical significance in the area as well as boasting all of the modern conveniences of a metropolitan city of 200,000 residents. It has both highly dense urban industrial and residential areas as well as sprawling rural areas that encompass the 112 square mile that is the greater Shreveport metropolitan area. To state that Shreveport has experienced a building boom in the last five years simply would

not do justice to the degree of construction that has taken place during that period.

In 1999, the value of non-residential construction nearly doubled that of 1998. Anchored by the current \$800 million General Motors plant expansion, the construction of new homes, businesses, hospitals, shopping centers, casinos and hotels are just a few of the positive economic and social conditions that exist today (Greater Shreveport Chamber of Commerce, 2004). Like most areas with similar demographics, Shreveport has a plethora of neighborhood configurations and community cultures that surround its industrial and service oriented businesses. Unfortunately, in some of these neighborhoods, citizens have a higher instance and are more likely to suffer from the results of a residential fire than other areas.

For the purpose of this research, the most notable statistic that plagues the poorer, socioeconomically depressed neighborhoods is the incidence of fire and the associated and resulting deaths, injuries, and property damage. The United States Census (2001) reported these neighborhoods (TABLE 1), using household incomes of less than \$25,000 as the benchmark for defining poor families and those living below the poverty line, made up roughly 41.8 percent of the overall households in Shreveport.

Over the last five years the death rate due to fire in Shreveport has remained consistent from a high of five deaths in 1999, 2002 and 2003 to a low of three deaths in 2000 and 2001. At the end of 2003, two boys lost their lives in an overcrowded two story home that had no working smoke detectors.

TABLE 1 – Shreveport household economic demographics

Households				
	1990	2001	2006	2011
Household Income Distribution				
Under \$15,000	48,161	37,527	35,411	33,785
\$15,000 - \$24,999	26,906	23,820	21,157	19,061
\$25,000 - \$34,999	21,638	17,000	16,819	17,195
\$35,000 - \$49,999	21,505	24,857	23,991	20,647
\$50,000 - \$74,999	14,609	25,056	27,566	30,762
\$75,000 - \$99,999	3,564	10,437	14,453	18,031
\$100,000 - Above	3,341	7,971	10,751	14,417
Household Income Distribution by Percentage				
Under \$15,000	34.4%	25.6%	23.6%	22.0%
\$15,000-\$24,999	19.2%	16.2%	14.1%	12.4%
\$25,000 - \$34,999	15.5%	11.6%	11.2%	11.2%
\$35,000 - \$49,999	15.4%	16.9%	16.0%	13.4%
\$50,000 - \$74,999	10.4%	17.1%	18.4%	20.0%
\$75,000 - \$99,999	2.5%	7.1%	9.6%	11.7%
\$100,000 - Above	2.4%	5.4%	7.2%	9.4%

In February 2004, a middle-aged man was overcome and died in a house fire, unable to escape because of burglar bars that laced the structure. Just three days later an elderly shut-in died when she could not get out of her bed after a candle in her room caught a nearby curtain on fire. She was using the candle for warmth because her utilities had been shut off because of non-payment.

In reviewing these and other recent fire deaths in Shreveport (TABLE 2) one factor loomed as a constant: most were in neighborhoods that had large segments of their population living below the poverty line. Records for the last five-and-a-half years, 1999 through July of 2004, show the mean percentage for those households living below the poverty line in the area where the fire occurred was more than 50 percent (U.S. Census Bureau, 2001). Most of the deaths

were close to the interior of the city and in its predominately urban areas. The racial demographics of these same areas is 70 percent black. Of the 21 residential fire deaths in the five and a half year period, 81 percent were of black race.

TABLE 2 – Shreveport fire deaths, 1999-2004

Date	Sex	Race	Age	Location	Living below poverty line
01/11/99	F	B	99	3119 Abbie	47.8%
06/24/99	M	B	49	125 E. Herndon	43%
11/30/99	F	W	64	1543 Clover	58.3%
12/20/99	M	W	76	713 Lincoln	61%
03/30/00	M	B	35	5902 Lakehurst	49.7%
03/31/00	F	B	62	413 Fuller	58.3%
12/17/00	M	B	22	3535 Pennick	60.5%
07/22/01	M	B	50	2037 Millen	43%
10/01/01	M	W	64	7104 Louise	35.3%
11/17/01	M	B	71	3519 Sunset	60.5%
08/19/02	M	B	77	341 E. 80 th	58.3%
09/01/02	M	B	16	2745 Lindholm	60.5%
10/12/02	M	B	35	2238 Jack St.	43%
01/19/03	M	W	66	246 Pennsylvania	25.5%
03/29/03	M	B	48	1845 Abbie	47.8%
07/23/03	M	B	56	4129 Carvier	49.7%
11/05/03	M	B	9	4115 St. Vincent	58.3%
11/05/03	M	B	6	4115 St. Vincent	58.3%
02/11/04	M	B	30	1744 Russell Road	43%
02/14/04	F	B	85	5218 Virginia	60.5%
04/07/04	M	B	90	3033 Skelly	43%

The Shreveport Fire Department has an extensive fire education program involving school age children throughout the city as well as adult programs that emphasize the importance of smoke detectors, home evacuation plans, and general fire safety. In 2003, the Fire Prevention Bureau delivered more than 300 safety programs, reaching 27,503 people. A concentrated effort for an increased

emphasis of fire prevention in those communities identified as being at increased risk for fires was undertaken in 2003. In these areas, along with more fire prevention education, firefighters have assisted in the delivery and installation of smoke detectors on a door to door basis.

Despite current public education efforts, the instances of fires and moreover the occurrence where a life or quality of life is cut short by the devastating consequences of fire, appear to be holding. Neighborhoods with the largest social issues related to poverty and depressed socioeconomic standing are continuing to suffering from a greater number of fires, fire deaths and injuries, and property loss as compared with other areas of the city,

This paper was prepared to satisfy the requirements for the Leading Community Risk Reduction (LCRR) class in the Executive Fire Officer Program at the National Fire Academy (NFA). This research relates to the modules on Assessing Community Risk and Intervention Strategies delivered in the LCRR curriculum. By distinguishing fire risk factors that are affecting the poor, assessing those factors in Shreveport neighborhoods, and identifying present and future reduction measures that can be taken to minimize the occurrence of fire, it supports the United States Fire Administration (USFA) operational objective pertaining to “Promoting within communities a comprehensive, multi-hazard risk-reduction plan led by the fire service organization.”

LITERATURE REVIEW

Douglas (1985) states that statistics in the United States show that income below a certain level is a good predictor of relative exposure to risk. The percentage of persons who are unable through chronic illnesses to carry on their major life activities declines as income rises. Income had a greater impact than race upon a person's limitation of activity, but the death rate among disadvantaged minorities in 1977 was higher than for whites of all ages until age 80. Blue collar workers reported a rate of 40.6 persons injured per 100 current employees. A considerable amount of research indicates that poor households are more prone to fire and its consequences than are middle or upper level income (Long, 1994).

In Syracuse, New York, Donner and Karter (1978) found that the population characteristic most highly related to fire risk was family stability. Stability defined as persons under the age of eighteen living with both parents. The study concluded that the lower the value of stability, the higher the fire rate. Tracts in the low-risk group had a mean fire risk rate of 1.64 per 1,000 population, while the high risk group had a mean fire risk rating of 6.54 per 1,000 population. In Syracuse, crowdedness that led to instability was found to be the most notable contributing factor associated with a high fire risk rating, experiencing almost four times the number of fires per 1,000 population than did the less crowded areas. However, in 13 crowded tracts identified, 11 also fell into the poor group.

In three of the remaining four cities used in the Donner study: Newark, New Jersey, Phoenix, Arizona, and Toledo, Ohio, the distinguishing characteristic tied to a high fire risk rating was poverty – defined as living conditions below the poverty line. In the last remaining city of the study, Kansas City, Missouri, like Syracuse, found that family stability was the highest contributing factor to fire risk. Overall, in three out of five cities where the study was conducted, poverty was the most significant factor for placing individuals and/or families at a higher fire risk than others in the population. Additionally, other high risk factors identified in the course of the study were high vacancy rate, lack of ownership and other factors associated with low income housing (Donner & Karter, 64).

The decaying cores of Northeastern and Midwestern cities are increasingly prone to severe fires. Boarded buildings, burned-out shells, fire-charred lots, and children playing in rubble are visible in these areas. Factors contributing to fires being deliberately set in these desolate neighborhoods are men quarreling and one setting the other's house on fire; a man thrown out of a bar returns later that night to set fire to the business; children playing in an abandoned building set it ablaze (Burchell & Sternlieb, 1973).

Clark (1982) stated that building designers have access to a host of new materials and structural assemblies that, although increasing the thermal efficiencies of buildings, because they are extremely lightweight and flammable, possibly contribute to breaches in the fire-stopping assemblies. Government-sponsored housing for low-income individuals and families shows an increase in

the use of these types of materials because of the significant cost savings associated with their use.

Norton (1989) found that homeless are exposed to a higher degree of fire risk in a number of areas but because these risks often pale in comparison to their other daily problems, fire safety is a difficult concept to introduce. One study that looked at the cause of death among the homeless in Atlanta, Georgia, found that 15 percent were caused by fire. The study showed that fires, along with hypothermia and starvation, were the leading individual causes of deaths among the homeless.

Because of social pressures, family problems and emotional and economic stress, substance abuse in the form of alcohol among homeless men is 25 to 40 percent. Additionally 10 to 34 percent of this same group is addicted to some kind of drug other than or in addition to alcohol. Substance abusers are particularly vulnerable to smoking injuries and fire deaths and usually involve individuals who lit cigarettes and fell asleep. The cigarette eventually lit their clothing or other near-by combustibles causing severe injuries and/or death from burns or asphyxia (29).

In the late 1970's a fire risk problem was found with boarding houses used to care for deinstitutionalized mental patients. Sited as risk factors that contributed to a string of fire deaths at these type of homes, including a New Jersey fire that claimed 31, were inadequate fire training for staff and residents, the fact that most of these individuals were mentally and physically impaired and could not respond properly to the notice of fire contribute to the large loss of

life. Other risk factors cited for this group included delayed notification of the fire department, lack of fixed fire protection systems; substandard protection openings; and the lack of standard second means of egress from resident's rooms (31).

Between 1974 to 1984, roughly 300 people died in boarding home fires killing three or more persons. In that time, residents had a five times greater risk of dying in a multi-death fire than residents living in other conditions. Identifiable risk factors contributing to these high death numbers included:

- Lack of fixed fire protection systems
- Inadequate exits
- Combustible interior finishes
- Unenclosed stairways
- Untrained and unprepared staff and residents for fire emergencies
- No automatic fire detection systems
- Lack of automatic sprinkler systems (32)
- Children left unattended playing with matches
- Improper heating and cooking techniques
- Portable heaters

Efforts can be made to help minimize the potential fire risk among the homeless in this country, including teaching fire safety in shelters to provide information on the dangers of cooking, heating, and smoking hazards. This includes educating the staff of these facilities. Additionally the homeless must be prevented from entering unsafe, vacant, and condemned buildings. Some of the

homeless on the streets are in need of professional help. Their biggest risk factor is themselves. It is the responsibility of the fire protection community to assist this vulnerable group in reducing the danger of fire in their lives (37).

Most of the poor families in America had a higher risk of dying in a fire than those with incomes above the poverty line. Some poor victims of fire could not notify the fire department because they had no phone and they did not discover the fire earlier because they had no smoke detector. The many efforts that have gone forward in an attempt to change this type of situation: fire safety programs; public education, increased enforcement of codes and standards; product redesign; automatic detection, have all fallen short on having an impact on the largest segment susceptible for fire risk – the urban and rural poor of America (Fahy & Norton, 1989).

Results from a 1981 study in Toledo, Ohio showed a relationship between income and overall fire rates, and then listed the major causes of fires in low-income, inner-city neighborhoods as incendiary, smoking, and children playing. In San Diego, people living below the poverty line explained at least 50 percent of the variation of fire rates between the census tracts of each neighborhood. In that analysis poverty (living below the poverty level), under education, and parental presence most strongly related to fire rates (32).

A 1970's study of southern states conducted by the National Bureau of Standards Center for Fire Research concluded that the most common cause of fatal fires as heating. The study speculated that the warmer climate of the south and people believing that they can endure cold weather, actually contributed to

the use of less-expensive and more dangerous sub-standard heating equipment such as portable space heaters. The poor, when using these heaters, were less likely to follow the manufacture's instructions and heed their warnings (33).

Being urban poor means an added risk of living in a high crime area, which means a greater risk of arson and added pressure of installing security measures, such as burglar bars, that also jeopardized safe escape routes. Additionally, children in these homes are more likely to commit arson than other populations. The high incidence of fires and other problems faced by individuals in the inner city may be another manifestation of the serious social and economic problems facing this segment of the population (34).

Only spending the extra time and resources to design and implement fire safety strategies that make sense for poor households will make major inroads into the high risk of fire for America's poor (36).

Barrow, Barrow, Herndon, Davis, and Spies (2004) stated that deaths from thermal injuries are most frequent in residential fires, particularly in low-income multiple family housing. Children, young males, and the elderly are most often the victims of this type of residential fire that is known to have a higher fatality rate compared to burns from other causes. This association is thought to be brought about by the added trauma of inhalation injuries.

Minority children from low-income families are more likely to perish in residential fires as compared with other children of more favorable economic environments. Studies have shown that as the family income increases, racial differences in the percentage of fire deaths become less important (72).

In children that are less than five years of age, scalds from hot liquid spills are the most common burn type injuries. While the mortality rate for these types of injuries remains relatively low in comparison with the number of reported cases, the African American mortality rate is three times that of Caucasians in similar situations (72).

In a 1985 through 2001 study that looked at the records of 3179 patients admitted to the Shriners' Hospital for Children in Galveston Texas, minority children from low-income families were shown to have a three times higher affinity for dying as the result of injuries sustained from a residential fire than non-minority children from higher income families. Deaths due to the ignition of clothing in low-income countries remain common during the winter, mainly due to the lack of fire resistant sleepwear (76).

A correlation was shown to exist between fire deaths and poor socioeconomic environmental conditions such as:

- living in older buildings
- crowded living conditions
- open fires or heaters which are not designed for indoor use
- flammable clothing
- Absence of alarm systems (Goodwin, Mason, & Pruitt 2003).

With home fire deaths still accounting for 2,670 or 79 percent of all fire deaths, the following fire safety initiatives in the home remain the key strategy to any plan designed to reduce the fire death toll:

- More widespread fire education about preventing fires and how to avoid serious injury and death in the event of a fire
- Fire education programs that are designed with a continuous update as to the cause of house fires
- Use and maintenance of smoke detectors
- Develop and practice home escape plans
- Residential sprinklers in wide usage
- Make home products more fire safe
- Special safety needs of high risk groups including the elderly, children, and the poor need to be addressed (Karter, 2003, 59).

Hall (2002) reported that in the United States, between the years 1991-93, four burn injuries per 1,000 population were reported as being medically attended or placing the person to a half a day of restricted activity. The burns were categorized as being from hot gases, liquid or solid objects, or electrical, chemical, or radiation effects.

Of the burn injury rates reported, they were highest for the poor but show only minor differences by race and no consistent pattern with regards to regional demographics. However, this perspective is somewhat blurred because of the constantly changing categories used to define the poor. It was found that the differences were consistent among income levels but not available for all analysis concerning differences in education level as being contributing factors to burn injuries (32, 34).

The NFPA Journal (1996) stated that in 1992 more than 13 million households lived below the poverty threshold of \$14,343 for a family of four. Besides their poor financial outlook, these families also had to worry about the fact that they had a higher fire risk than any other demographic group. Major factors listed as contributed to this increased risk included:

- Burglar bars on windows – used in low-income areas as protection against crime. In the years between 1986 and 1991, nearly 16 fire deaths annually could be attributed to security bars.
- Homes without smoke detectors – despite the fact that having a smoke detector decreases the chance of dying in a house fire by as much as 50 percent, some poor view a smoke detector as a luxury item that they simply cannot afford.
- Lack of Education - one of the top three factors that contribute to fire deaths was someone over the age of 25 with less than eight years of formal schooling.
- Children unattended – some poor have to choose between working to support and feed their family and staying home and going hungry. This scenario often means that small children are left unattended.
- Not being able to afford utilities – supplemental or alternative heating equipment, including the use of portable heaters and ovens, are often used by the poor. “In cases where utilities have been completely cut off, people may turn to candles or other alternative heat sources.

A number of factors relating to fire incidents have been reported in studies conducted in the United States, including poor and substandard housing, overcrowding, social class, race, lack of family stability, and proportions of young or elderly in the population. Social dissatisfaction or malaise has been listed as an overall possible causation factor for fire incidents, which include class, race, employment position and family stability (Chandler, Chapman, & Hollington, 1984, 15-16).

In the areas of analysis done in the Britain study, four social parameters were found to significantly correlate with the incidents of fire:

- Proportion of owner occupation of property
- Socio-economic group association
- Unemployment
- Overcrowded living conditions

The causes of actual ignition were mostly contribute to carelessness or lack of supervision or vigilance and were listed as:

- Children with fire materials
- Smoker's materials
- Malicious ignition
- Unknown (17).

The Britain study clearly suggests that the incidents of fire are related to social and economic factors. In this group include overcrowding, dissatisfaction with housing and lack of amenities thereto, and family instability. The study pointed to the fact that most families that found themselves in these types of

living conditions often led to secondary contributing factors for high fire incidents such as stress, carelessness, and conflict, would move and live elsewhere if their personal economic situation permitted (20).

In an article by Hollman, Murrey, Pitts, and Smith (1987) socioeconomic factors, such as social climate, income structure, economic climate, and social structure were analyzed to determine correlation to arson. The findings indicated that urban states, having a higher percentage of criminal activity than most rural areas, have a higher incidence of arson. Social structure was listed in leading to criminal activity rather than poverty. Additionally, when evaluating incomes per capita, education, the percentage below the poverty level, and the portion of the states population receiving food stamps, those states with less educated populations and with more families below the poverty level and receiving food stamps have a high statistical significance and strong level of association with greater numbers of fires (60, 68-69).

The lack of strong cultural norms around preventing fires and the fact that most Americans tend to view fires as an inevitable part of life, characterizing most fires as “accidents,” has hampered fire prevention measures across the country (Chandler, et al. 1984). More focus needs to be placed on not putting out fires once they start but on fire prevention before an incident has occurred.

Some strategies listed as “reinventing” fire protection in the United States were:

- Increased funding for fire department fire prevention staff and operations.
- Increased public relations and community awareness to the fire problem.
- Learning that fire occurrences do not have to be acceptable.

- Educate and provide individuals with the tools to protect them from fire.
- Educate individuals to minimize the loss of death, injuries, and property damage in the event of a fire (Fire death rate trends, 1997, 15, 17-18).

Fahy (1993) noted that the original NFPA study stated that poverty and single parenthood, that lead to increase fire danger, can limit the options of child care to those who could afford it and those who could not. The parents that had to leave their children at home did not do so because they were neglectful or did not care but because they had to in order to work. In this analysis most parents that had to leave their children at home alone did not fully understand the fire dangers that their children face.

Thus, any public education effort will have to address the problem to parents in terms that described leaving children alone as a behavior that every parent should avoid, and why. Otherwise, it will continue to be regarded – and perhaps ignored – as a label that few parents believe applies to them.

In his research paper, Moody (1997), discussing fire prevention measures and the poor, states that actually targeting poverty seems to be the next major hurdle for the fire service and that the overall object is not to reduce poverty but to develop programs for the poor to have the same level of fire safety as other economically advantaged families. Moody further states that there exists a moral obligation to address the correlation between poverty and the frequency of fires within a community. The following educational recommendations were listed to improve fire conditions with the poor:

Fire Safety Education – programs that are more effective in reaching the poor may not be the same as those used for the middle class. Use and partner with local assistance agencies that already have inroads to these groups, including churches, neighborhood groups, Habitat for Humanity, housing commission, Salvation Army, Urban League, and the like (26-27).

In summary, the literary review findings influenced the researcher and the project by providing information and perspective that there were significant underlying social and not just economic issues that lead to increased fire risk for the poor. Most of the information provided in the literature review that listed fire risk factors for the poor, such as burglar bars on windows, homes without smoke detectors, children unattended, and an inability to pay utility bills, also provided a rational social explanation and not necessarily an excuse as to why. This has led the researcher to believe that a more comprehensive and target specific fire prevention program is needed than is currently and commonly being applied by fire departments when dealing with fire and the poor.

PROCEDURES

The purpose of this applied research paper was to identify fire risk factors that affect the poor, their impact on the Shreveport community, and identify present and future risk reduction measures to minimize fire occurrence in these instances.

The procedures for this research paper included a literature review, survey, and an interview with a fire prevention specialist who deals with the issue of fire and the poor in the Shreveport community.

The literature review was completed by gathering information from the variety of text including publications, management and industry journals, fire service periodicals, United States Fire Administration text, and previous Applied Research Projects from the National Fire Academy's Executive Fire Officer Program. Locations used for the literature review include:

1. Learning Resource Center (LRC) at the National Fire Academy in Emmittsburg, Maryland.
2. Shreveport Regional Library, Downtown branch, Shreveport, Louisiana.
3. Training Academy Library, Shreveport Fire Academy, Shreveport, Louisiana.

The purpose of the literature review was to provide information relative to the subject matter for this Applied Research Project. A survey (APPENDIX A) was used to provide information relative to the subject matter of this Applied Research Project and to specifically identify and evaluate potentially contrasting fire risk factors and hazards for individuals and families living in residential property in Shreveport separated by geographic, demographic, social, and economic boundaries.

A random phone survey was conducted May 10-28, 2004 in four Shreveport neighborhoods defined by the U.S. Census Bureau (2000) as: District 2 (Cooper Road), District 6 (Cedar Grove), District 9 (Ellerbe Road), and District

10 (Southern Hills). The researcher chose those contacted indiscriminately by selecting corresponding addresses that were in each district from the local phone directory. No two residences were contacted having the same last name or living on the same street.

The Districts were selected based on their contrasting demographics and economic differences but similar populations (TABLE 3). The population surveyed was 0.15 percent of each district represented. The sum of all populations represented was 61,670 or 30.7 percent of the 200,549 total Shreveport residents. The percentage of surveys completed was 100 percent. This was possible because the researcher would go to the next random address if the residence did not answer the phone, was unwilling to participate in the survey, or was not 16 years of age. In all, 92 total households from the four districts listed participated in the survey.

Each of the four Shreveport neighborhoods was surveyed to determine the fire risk factors associated with each responding household and to evaluate whether or not there was a significant difference from neighborhood to neighborhood. The four neighborhoods were distinguished by an alphabetic designation of A, B, C, or D. These designations were based on the mean household income of each neighborhood as determined by the U.S. Census Bureau (2000). The highest income being designated with an "A" and the lowest a "D."

Survey participants were only required to respond with yes or no answers for the sake of time and to allow as many questions as possible. In order to

maintain an equal comparison between the areas, as there were different numbers of households surveyed in each area but the same 0.15 percent of the population, the researcher had final results broken down into percentages.

TABLE 3 – Districts used in survey populations

Designation	Population	Median household income	Population 16 years and over	Percentage of total population of 200,549	Number of participants (0.15% of population)
A	Ellerbe Road	\$51,565	17,602	8.8%	26
B	Southern Hills	\$34,541	15,459	7.7%	23
C	Cooper Road	\$28,093	14,579	7.2%	22
D	Cedar Grove	\$21,269	14,030	7.0%	21

On June 24, 2004 the researcher conducted an interview with Assistant Chief David Glass of the Shreveport Fire Department's Fire Prevention Bureau regarding the instances and the effects of fire on poorer neighborhoods and individuals in those communities. The interview questions (APENDIX B) were designed to gain insight into the Shreveport Fire Department's current efforts and future plans to reduce and minimize these types of fire occurrences through fire prevention measures.

Definition of terms:

Associated risk factors: material and/or intangible factors that are determined to be caveats for the materialization or production of an event.

Home evacuation plans: a specifically designed plan that enables an individual or family to follow specific pre-instructions and directions on what procedures to follow to safely and expeditiously exit their residence in the event of a fire.

Family stability: as related to fire risk, this is the percentage of persons under the age of eighteen living at home with both parents (Donner & Karter, 1978).

Latch-key kids: children, who after leaving school are at home alone for a period of time before an adult caretaker arrives. The up-to-date term for this is self-care, while the old term described those children easily identified by the key hanging from a string around their neck.

Multi-hazards: identifiable man-made or natural occurring hazards that threaten or could potentially threaten a community, such as earthquakes, hurricanes, or a terrorist event.

Poverty: lack of providing material means or comforts (2001, Webster).

Households with four or more persons whose combined income level is less than \$25,000

Limitations:

Limitations for this applied research paper were identified by the researcher as the following:

1. Although there was literary information available on the subject of fire and the poor, the researcher found limited recently published imperial data that defined correlations between the two.
2. The researcher found that several of the individuals of the surveyed population were unfamiliar with any fire prevention procedures, terminology, and related safety information. This may have caused less than truthful responses on the survey as the researcher found that some of the population may have delivered the answers that they thought were

right or what the researcher was looking for, even though there was no right or wrong answers.

RESULTS

What risk factors contribute to fire related deaths, injuries, and property damage where the occupant(s) are considered poor?

Overall, in their study, Donner and Karter (1978) concluded, poverty was the most significant factor for placing individuals and/or families at a higher fire risk than others in the population. Additionally, other high risk factors identified in the course of the study were high vacancy rate, lack of ownership and other factors associated with low income housing. Family instability and crowdedness in the home also led to a high fire risk. The majority of these groups also fell into the poor group of the study.

Building construction was mentioned as a cause for increased fire risk to the poor, namely because government contractors often used cheaper materials and skirted some of the laws pertaining to fire stops in construction. Additionally it was noted that in poorer areas, housing had a tendency to be left to decay and become unkept which opened up the door for homeless and vagrants to seek shelter. These homeless were often responsible for a large percentage of fires in vacant buildings and homes in these same areas. In one study, Norton (1989) looked at the cause of death among the homeless in Atlanta, Georgia. He found that 15 percent were caused by fire.

Social pressure also was a theme that ran throughout the literature review when looking for increased fire risk factors and the poor. Substance abuse,

alcoholism, unhappiness, depression were listed as being contributing factors that resulted in social and civil unrest that often led to altercations, arguments, and eventually arson. Being poor also means an added risk of living in a high crime area, which means a greater risk of arson and added pressure of installing security measures, such as burglar bars, that also jeopardized safe escape routes. Additionally children in these homes were found to be more likely to commit arson than other populations. The high incidents of fires and other problems faced by individuals in the inner city may be another manifestation of the serious social and economic problems facing this segment of the population (Fahy & Norton, 1989).

The family and its associations, namely children, were used as examples a number of times in the literary review as the host or catalyst for a number of fire risk factors. Children playing with matches, left alone, and committing arsons were all listed as risk factors associated with the poor. Additionally, the poor are more susceptible to leave their children at home alone in order to run errands or work. This is not usually done maliciously but out of necessity. Clark's (1982) results from a 1981 study in Toledo, Ohio, showed a relationship between income and overall fire rates, and listed the major causes of fires in low-income, inner-city neighborhoods as incendiary, smoking, and children playing. Other cases were:

- Family instability
- Overcrowded living conditions
- Social unrest – quarreling, disagreements, etc.

- Housing construction type – because of significant cost savings, construction of government sponsored housing for low income individuals and families shows an increase in the use of inexpensive, lightweight, and flammable materials.

Residential heating sources were listed as a primary cause of fire in poor populations. A 1970's study conducted by the National Bureau of Standards Center for Fire Research listed the majority of these instances occurring in southern states. The reason cited by Fahy and Norton (1989) for this was individuals in the south, where it was warm most of the year, were not as familiar with heaters and often used substandard units not knowing the difference.

Are risk factors associated with the increased occurrence of fire more prevalent in demographically lower income areas of Shreveport than others?

The following are the results of the fire risk survey conducted in four Shreveport neighborhoods previously described and defined in the Procedures portion of this document (Complete results for all questions are shown in APPENDIX C).

When asked whether or not they had a working smoke detector in their home, the majority of respondents quickly answered yes. However, when asked by the researcher to physically go to the smoke detector in the residence and activate the test button, of the total number (76) of respondents that originally claimed to have a working smoke, almost one-quarter (18) could not find the

smoke detector in their home or verify that it was operational. They then changed their answer to no.

Overall, a mean of 62 percent was derived from all responding designations as having a working smoke detector. Populations A, B, and C, all exceeded the overall mean 3 to 11 percent. Residents in population D, were less likely to have a smoke detector, as only 43 percent responded yes to the question.

When asked if there were elementary school-aged children or younger living in the home, overall 60 percent of the respondents said yes. Only a variable of 12 percent was present from the lowest response from population A and the highest response from population D was noted. Although school-aged children in the home was established in the literature review as being a factor in the increased instance of fire in residential home, the researcher probed further, asking first whether or not the residence was a dual-parent home and second, because of economic reasons, whether or not the children had ever been left alone at the residence.

Responses to the questions of dual parent and ever having left the children alone were typical of the majority of the responses in the survey. Populations A and B were higher in the instance of dual parents in the household than were C and D. The widest margin of difference was between populations A (73%) and D (36%). As for the children being left at home because of economic reasons, population C reported in 9 out of 13 households this had occurred. Contrastingly, population A had only 2 out of 15 households where this had

occurred. The majority of respondents that listed having to leave their school-aged children at home for economic reasons, even if for very short periods of time, also answered no to the residence being a dual-parent house.

When asked whether there were multiple families living within the residence, overall 36 percent said yes. Nearly or more than half of the responses in population's C and D said yes to the question: C with 45 percent and D with 52 percent. Population A had the smallest number of combined family households, with just three of the 26 households surveyed saying yes. In population B, 34 percent said they had more than one family staying in the same residence.

The results to the question of the household having reliance on portable space heaters were mixed and variable according to the different areas of the population. Population D led all areas with 16 of their 21 households (76%) stipulating the use of portable space heaters, while only 15 percent reported using the utilities in population A. The other two populations, B and C, fell in between those reported in A and D, with 30 percent and 64 percent respectively. Several of the responders stated that they not only used the portable heaters in the cooler months but year round. These responses were from individuals who stated they were more than 60 years old. There was also a lone response that stated an unconventional method that for the purpose of the survey was classified as such. That respondent said that she used a heated wooden log and rolled it in wet linen and then placed it at the foot of her bed for warmth at night.

When questioned about having their home equipped with burglar bars, overall 32 percent of the respondents said yes. However only 5 of 49 (10%) of

the households from populations A and B reported having the devices, while 23 of 43 (53%) of the C and D populations reported their use. Several of the respondents reporting to knowing the dangers inherent in having burglar bars on their home but said that it was a matter of personal safety from crime and not fire that they were most worried about.

The next two questions were in regards to smoking and drinking in the residence. The answers provided by respondents to these questions were more closely associated than the previous answers. Almost half (47%) of the total population surveyed reported a smoker in the home, with the widest margin of difference only being 10 percent between all neighborhoods. A number of respondents said that although they or someone in the household smoked, they did not do so in the house. Alcohol consumption had one of the highest overall mean percentages at 71. Populations A, B, and C were relatively close and all between 65-73 percent. Noticeably, population D was a full 10 percentage points over the mean at 81 percent.

In regards to employment of adults living in the households, the results produced an overall mean percentage of 51. The difference in the populations was, at its highest, 54 percent (between A and D), and at its closest, 21 percent (between C and D). The population with the highest percentage of respondents stipulating that all able adults within the residence were employed was B. This population is a typical working class neighborhood where 18 of the 23 individuals (78%), 27 percentage points above the mean, surveyed reported that all of the adults in the home were working. In the A population there were a number of

respondents that said not all of the adults were working but that was by choice and not because they could not find a job. Several stated that they worked in the home. This group was further questioned as to whether work meant an income producing venture or simply work around the house. Those who stated they work around the house, such as cooking, cleaning, and taking care of children, were classified as a no to the question.

The last question had to do with level of education and did all members of the household eligible, complete high school. Some clarification as to the definition of “complete high school” was necessary to stipulate the inclusion of a GED or equivalent diploma. The mean percentage for this question was 73 but again a wide discrepancy was found when polling populations A and B as compared to C and D. Collectively, A and B had a yes percentage mean of 87.5, while C and D registered 58. Population D was a full 21 percentage points under the mean at 52.

What risk reduction measures are the Shreveport Fire Department currently taking and planning in the future to reduce and minimize fire deaths, injuries, and property damage to the poor?

The following are excerpts of a June 24, 2004 interview with Assistant Chief David Glass, director of the Shreveport Fire Department’s Fire Prevention Bureau, regarding what risk reduction measures have been taken and can be taken in the future to minimize fire deaths, injuries, and property damage affecting the poor.

When asked what measures the Shreveport Fire Department was taking to reduce and minimize the occurrence of fires and related injuries and deaths in poorer neighborhoods, Glass responded that since the early 1990's, the Fire Prevention Division focused on fire safety issues in poorer neighborhoods with a variety of interventions. The first initiative he mentioned was education of the public on the effectiveness of smoke detectors. The program provides free installation of smoke detectors in homes that were not otherwise protected. To follow-up on that programs success, the department set up monitoring on incidents where a fire department installed detector was credited with early notification, whereby the occupants escaped safely from fire. Glass said that each of these incidents was highly publicized to reinforce the learning process in the community. A schedule to exchange batteries in those detectors installed by fire prevention personnel continues to support this program. More recently, Glass said that his office has introduced other fire safety programs for high risk neighborhoods such as Safe Babysitting, Home Fire Safety, Kitchen Fire Safety, Home Fire Safety for Senior Citizens and other accident and injury prevention programs.

When asked if there are any risk reduction programs within or delivered by the Shreveport Fire Department tailored to target high risk areas and individuals for fire occurrence, Glass responded that presently the Fire Prevention Division delivers fire safety programs specifically tailored for persons who are blind and visually impaired, deaf and hard of hearing, senior adults, children, juveniles (latch-key kids) and hospital and nursing home staff and residents. He did say

that they were developing programs directed towards target audiences in poorer neighborhoods that can only be reached in church assemblies and neighborhood watch associations. All of these groups represent persons who are at high risk for injuries or death related to fire.

When asked what the long term strategic plan for the Shreveport Fire Department in minimizing the occurrences of fire and related injuries and death in the area, Glass responded that the Fire Prevention Division's long term strategy for minimizing fire deaths and injuries is based upon both current and future trends in the community. According to Glass, Public Education personnel are using statistical fire data, EMS reports, and other informational sources to set program goals for future fire and accident prevention programs. They plan to identify core issues affecting the community and verify plans for education programs to reach the target audience affected by fire occurrences. They are also researching new and different programs to meet the education and behavioral needs of persons responsible for such fire and injury occurrences. Glass said that his personnel have been challenged to find a way that matches traditional programs that have been successful with new delivery techniques for future audiences and to build the necessary coalitions with community groups and individuals to assure the effectiveness of each. The programs will be evaluated based upon future statistics and participant surveys to guarantee their success.

When asked what the Shreveport Fire Department was doing to measure their effectiveness in fire prevention efforts in poorer neighborhoods, Chief Glass

responded that presently the only tool available for monitoring the success or failure of the effectiveness in fire prevention efforts in poorer neighborhoods is to count the number of fires that occur and compare that data to past reports. Glass said that although numbers may be either up or down from previous periods, numbers alone do not reflect a true measure of learning from lectures or presentations related to fire safety and accident prevention. Fire Prevention program participant surveys have been used in the past and are being revised to validate the current success of learning following program deliveries, said Glass.

When asked what limitations or roadblocks the Shreveport Fire Department faces when trying to develop and implement fire risk reduction measures and programs, Glass stated that the Fire Prevention Division continues to research, develop and implement fire risk reduction measures and programs but that obstacles have been encountered. The first limitation he mentioned is a lack of personnel staffing in the Public Education Section. According to Glass, this limits the number and type of program deliveries available to the community. Glass said that a request for additional personnel for education activities has been submitted in the division's five year plan to meet this need.

Glass also said that constraints within the fire department's budget continue to limit the purchase of needed educational materials, in service training, research and technology upgrades, adding, that without expanded literature purchases, the Fire Prevention division must rely on outside sources for donated literature related to various fire and injury issues. Glass also listed not being able to work with up-to-date computer hardware and software equipment

as a hindrance that his division struggles with. According to Glass, without this equipment they are unable to create contemporary educational presentations for changing audiences of all ages.

Lastly, Glass said that the philosophy of fire prevention, although adopted by the administration, has not been fully embraced by all divisions of the department, therefore limiting the effectiveness of some community oriented programs and ideas that require involvement from other fire department personnel.

The many efforts that have gone forward in an attempt to change the situation of the increased instance of fire related incidents with the poor, such as fire safety programs, public education, increased enforcement of codes and standards, product redesign, and automatic detection, have all fallen short on having a significant impact on the largest segment that is particularly susceptible for fire risk – the urban and rural poor of America (Fahy & Norton, 1989, 30).

DISCUSSION

The research conducted for this project was to identify risk factors that contributed to fire related deaths, injuries, and property damage in residences where the occupants were considered poor. Additionally, the research was to identify risk reduction measures now and in the future that could reduce the number of fire deaths, injuries, and property damage among the poor.

There are obvious fire risk factors that come to mind in residential settings, such as children playing with matches, no smoke detectors or food left unattended on a stove. These are common to all populations and not

necessarily specific to just the poor. However, the rate or ratio of occurrence of fires that affect the poor, and why, is more the issue at hand. As the researcher looked deeper into what separated the poor from the not poor in their propensity for having a damaging fire in their home or neighborhood, the social-psychological variables appear strongly contentious as the main antecedent precipitating these occurrences.

Family social pressures derived from economic stress, which may lead to depression, substance abuse, (Norton, 1989, p. 29) and other issues that may in themselves be risk factors or lead to other factors that contribute to the spread of fire in poorer neighborhoods, have to be taken into consideration. Is it sufficient to say that in order to solve the complexities of these underlying factors that the fire service must take a part in finding a way to fix social problems within their jurisdiction? Or can we simply try a different and tailored approach to educate different social and economic groups as to the dangers of fire? In his interview, Chief David Glass, director of the Shreveport Fire Department Fire Prevention Bureau, said his organization tailored programs to target high risk areas and individuals for fire occurrence by delivering fire safety programs specifically tailored for persons who are blind and visually impaired, deaf and hard of hearing, senior adults, children, juveniles, and hospital and nursing home staff and residents.

In a British study, (Chandler et al, 1984, p. 15-16) four social parameters were found to correlate with the instance of fire: proportion of owner occupancy of property, socio-economic group status, unemployment, and overcrowded living

conditions. In the survey of Shreveport residents conducted by the researcher, when asked whether there were multiple families living within the residence, overall 36 percent said yes. However, nearly or more that half of the responses in low income population said yes to the question.

Socioeconomic factors such as social climate, income structure, and social structure were more likely to have a correlation with incidents of arson than poverty (Hollman, et al, 1987, p.60). The NFPA (1996) listed families not being able to afford utilities as a major risk factor for the occurrence of a residential fire. Goodwin et al. (2003) said that a correlation was shown to exist between fire deaths and poor socioeconomic environmental conditions.

In fire dangers and the homeless, a group that was found to have a number of risk factors inherent with the poor, Norton (1989, p. 37) stated that these individuals needed to be provided with education that included the dangers of cooking, heating, and smoking, and should be provided by staff workers at shelters. In a study that looked at the cause of death in the Atlanta, Georgia homeless, fire was determined to be the cause in 15 percent of the cases (29). Children and the instances of fire where they were the instigation factor to the incident and/or the resulting death or injury were prevalent in the research. Fahy and Norton (1989, p. 32) stated, among other factors, children playing as a major cause of fires in lower income, inner city neighborhoods. Children, young males, and the elderly are most often the victims of death from thermal injuries in residential. In children that are less than five years of age, scalds from hot liquid spills are the most common injuries from fires (Barrow et al, 2004, p. 72).

In the survey, respondents were asked the questions of having dual-parents in the home and whether children were ever left alone out of economic necessity. The higher income populations were greater in the instance of dual parents in the household than the lower income populations. The majority of respondents that listed having to leave their school-aged children at home for economic reasons, even if for very short periods of time, also answered no to the residence being a dual-parent house.

The National Fire Protection Agency (1996) cited children left unattended as a major factor contributing to increased fire risk among those living below the poverty threshold for a family of four. Chandler et al. (1984, p. 17) stated one of the causes of actual fire ignitions, due to carelessness or lack of supervision, was children with fire materials. In an NFPA study, Fahy (1993) stated that poverty and single parenthood forced some parents to leave their children at home unattended, increasing their fire risk. In these instances, most parents left their children at home not out of neglect but because they had to go to work or run a critical errand. Most of the parents who were forced to do this and leave their children reported that they did not fully understand the fire dangers that their children faced while left unattended. Fahy went on to say that in addressing the problem, public education programs need to stress why leaving children at home alone is a behavior that should be avoided and why.

Minorities seemed to be heavily affected by the instance of fire and fire related injuries and death as opposed to the other populations, especially in Shreveport (see TABLE 2 – Shreveport fire deaths, 1999-2004, pg. 5). In

reviewing the fire deaths in Shreveport between 1999 and July, 2004, one factor appeared to be a constant: most were in poor, black neighborhoods. Of the 21 fire deaths during this period of time, 17 (81 percent) were of black race. Barrow, et. al. (2004, p. 72) said that minority children from low-income populations are more likely to perish in residential fires as compared with other children from more favorable economic conditions.

High crime areas that plagued poor neighborhoods was also found to be as issue that led to the increased number of fires and fire injuries and deaths. Fahy and Norton (1989, p. 30) expressed that being urban poor meant an increased risk of living in a high crime area. This in itself presented a life safety concern without the occurrence of fire. Because of this threat, individuals living in these conditions were faced with having the added pressure of installing security measures to their homes. Because burglar bars presented a less costly means of securing one's home, as opposed to an electronic security system, economics dictated that the majority of the homes in poor neighborhoods with extra security measures used burglar bars. In the survey, when respondents were questioned about having their home equipped with burglar bars, 32 percent said yes. However only 5 of 49 (10%) of the households from the higher income populations had the devices, while 23 of 43 (53%) of the lower income populations reported their use. Several of the respondents reported to know the dangers inherent in having burglar bars on their home but said that it was a matter of personal safety from crime and not fire that they were most worried about.

Americans have a different view of fires than does most of the international community. Theirs is more of a reactionary philosophy, while in other countries the focus is on prevention. There is even complacency in the fire service itself about fire prevention. Glass said in his interview with the researcher that the philosophy of fire prevention, although adopted by the administration, has not been fully embraced by all divisions of the department, therefore limiting the effectiveness of some community oriented programs and ideas that require involvement from other fire department personnel.

Additionally, there is a lack of responsibility and accountability assigned when someone or something, such as poverty, is identified as the cause of fires. Americans have the mind set that fires are a part of their everyday life and they are going to occur and more times than not they are accidental (Chandler et al. 1984, 15). If a man puts a pot on the stove and falls asleep and burns his home down, most American fire department investigators would list this as an accidental fire, whereas in other parts of the world, the man would be arrested and face jail time.

What can be done to decrease and/or minimize the occurrence of fires that effect the poor and the areas where they live? The following fire safety measures were reported by Karter (2003) to be key to any plan for reducing residential fire deaths: (a) more widespread fire education about preventing fires and how to avoid serious injury and death in the event of a fire; (b) fire education programs that are designed with a continuous update as to the cause of house fires; (c) use and maintenance of smoke detectors; (d) develop and practice

home escape plans; (e) residential sprinklers in wide usage; and (f) make home products more fire safe. FEMA's Fire death rate trends (1997) reported: (a) increased funding for fire department fire prevention staff and operations; (b) increased public relations and community awareness to the fire problem; (c) learning that fire occurrences do not have to be acceptable; and (d) education and providing individuals with the tools to protect them from fire, as ways of focusing needs on fire prevention before the fire occurred.

In his research paper, Moody (1997), discussing fire prevention measures and the poor, states that actually targeting poverty seems to be the next major hurdle for the fire service and that the overall object is not to reduce poverty but to develop programs for the poor to have the same level of fire safety as other economically advantaged families. Moody further states that there exists a moral obligation to address the correlation between poverty and the frequency of fires within a community. In his interview, Glass said, when asked if there are any risk reduction programs within or delivered by the Shreveport Fire Department tailored to target high risk areas and individuals for fire occurrence, that the Fire Prevention Division delivers fire safety programs specifically tailored for persons who are blind and visually impaired, deaf and hard of hearing, senior adults, children, juveniles (latch-key kids) and hospital and nursing home staff and residents.

The research revealed several implications for the Shreveport Fire Department and brought to light a problem that may run deeper and require more intervention strategy now and in the future than originally thought. The fire risk

factors that were identified as affecting the poor were primarily found to be due to social instability more than just being poor. The Shreveport Fire Department will have to deal with social and not just surface issues, such as installing smoke detectors, in combating the instances of fire and resulting deaths and injuries in fire prevention efforts for the poor.

The survey showed that the areas of Shreveport with lower household income levels fared much worse in having increased risk factors than those areas with higher household incomes. The results showed that there was an obvious difference in the number of risk factors associated with an area of the community and its household income level. The fire department may not be able to increase the income levels of the community but they can make the residents of those poor areas aware of the increased dangers because they fall into a certain demographic.

The Shreveport Fire Department has the opportunity to use the information in this research in promoting future fire prevention programs to children and adults alike. However, they must realize that in order for this venture to be successful, they must join their resources with other government, civic, and religious individuals and organizations that have an influence in these communities and a social understanding of the culture.

RECOMMENDATIONS

The following are recommendations for future initiatives of the Shreveport Fire Department intended to lower, minimize, and mitigate the instances of fire and

associated deaths, injuries, and property loss to the poor. As determined by the findings in this study, the researcher makes the following recommendations:

1. To reduce the number of fire risk factors facing the poor, promote a public relations effort through local media that identifies those at risk and what they can do to minimize the chance for a fire in their home.
2. Improve and increase funding for existing fire prevention programs that address specific high risk groups such as the poor and in Shreveport, the black community.
3. Use a team philosophy to approach reducing the number of fires and associated injuries and deaths to the poor. Develop partnerships and associations with various individuals and organizations that have influence, expertise and a social understanding of the poor communities in Shreveport.
4. Work closely with local contractors to ensure that all applicable fire safety measures are well known and being utilized in the construction of housing for the poor, elderly, or any other high risk group.
5. Work with local homeless advocate groups to promote homeless individuals or families seeking appropriate shelter in designated areas when temperatures fall below a certain level.
6. Keep accurate and up-to-date statistical information on fires, fire deaths and injuries and compare with fire prevention data to evaluate success of programs.
7. Develop fire prevention programs that are specific to children and parents in high risk groups.

8. Work with high risk communities to form fire prevention childcare network, where individuals could leave their children with a friend or neighbor if they would be forced to otherwise leave their child(ren) unattended for a short period of time.
9. Provide firefighters with ongoing information and training that demonstrates the positive effects a fire prevention program has in reducing the loss of life and serious injury in the event of a fire.
10. Ensure that proper fire safety training of individuals and families living in multi-family boarding homes is being conducted. This could be anything from mail-out informational fliers to conducting practical fire escape drills at the complex.
11. Promote through legislation ordinances and laws that will mandate fitting and retrofitting certain types of construction, such as multi-storied, multi-family dwellings with sprinkler systems.
12. Implement an aggressive home inspections program that will place firefighters inside of high-risk properties before a fire can occur. These inspections should be accompanied by a check off list of the items found in this research to be fire risk factors for the poor, such as sub-standard construction, use of portable space heaters, children left unattended, and burglar bars on windows. Following the inspections, residents should be informed of the areas of risk and educated on ways to minimize them.
13. Commission a more in depth study to analyze the effects of certain social and economic issues that affect the number of fires occurring to the poor and

in neighborhoods that fall below the poverty line. This should be a more scientific study that leads to actual correlation that could lead to greater insight to development of programs to change behaviors.

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APPENDIX A

Shreveport Fire Risk Survey

1. Is the residence equipped with a working smoke detector?
2. Are there elementary school-ages or younger children in the residence?
3. If answer to question two was yes:
 - a. Is the residence a dual-parent household?
 - b. Because of economical reasons, have the children of the household ever been left unattended to run errands, go to work, etc.?
4. Are there multiple families living within the residence?
5. Is the residence reliant on portable space heaters during the colder months of the year?
6. Is the home equipped with burglar bars?
7. Does anyone in the residence smoke?
8. Does anyone in the residence drink alcohol?
9. Are all adults within the residence employed?
10. Did all members of the household eligible complete high school?

APPENDIX B

Interview Questions

1. What public education measures are the Shreveport Fire Department taking to reduce and minimize the occurrence of fires resulting in injuries and deaths in poorer neighborhoods?
2. Are there risk reduction programs within or delivered by the Shreveport Fire Department tailored to target high risk areas and individuals for fire occurrence?
3. What is the long term strategic plan for the Shreveport Fire Department in minimizing the occurrences of fire and related injuries and death in the area?
4. What is the Shreveport Fire Department doing to measure their effectiveness in fire prevention efforts in poorer neighborhoods?
5. What limitations or roadblocks do the Shreveport Fire Department face trying to develop and implement fire risk reduction measures and programs?

APPENDIX C

Survey Results

Question 1. Is the residence equipped with a working smoke detector?

Designation	Responded yes/ (percentage)	Responded no/ (percentage)	Overall mean in % to yes	Difference in overall mean comparison to yes
A	19(73%)	7(27%)	62%	+11%
B	15(65%)	8(35%)	62%	+3%
C	15(68%)	7(32%)	62%	+6%
D	9(43%)	12(57%)	62%	-19%

Question 2. Are there elementary school-aged children or younger in the residence?

Designation	Responded yes/ (percentage)	Responded no/ (percentage)	Overall mean in % to yes	Difference in overall mean comparison to yes
A	15(58%)	11(42%)	60%	-2%
B	14(61%)	9(39%)	60%	+1%
C	12(55%)	10(45%)	60%	-5%
D	14(67%)	7(33%)	60%	+7%

Question 3. If the answer to question two was yes:

a. Is the residence a dual-parent house?

Designation	Responded yes/ (percentage)	Responded no/ (percentage)	Overall mean in % to yes	Difference in overall mean comparison to yes
A	11(73%)	4(27%)	56%	+17%
B	9(64%)	5(36%)	56%	+8%
C	6(50%)	6(50%)	56%	-6%
D	5(36%)	9(64%)	56%	-20%

- b. Because of economic reasons, has/have the child/children in the household ever been left unattended to run errands, go to work, etc.?

Designation	Responded yes/ (percentage)	Responded no/ (percentage)	Overall mean in % to yes	Difference in overall mean comparison to yes
A	2(13%)	13(87%)	44%	-31%
B	4(29%)	10(71%)	44%	-15%
C	9(75%)	3(25%)	44%	+31%
D	8(57%)	6(43%)	44%	+13%

Question 4. Are there multiple families living within the residence?

Designation	Responded yes/ (percentage)	Responded no/ (percentage)	Overall mean in % to yes	Difference in overall mean comparison to yes
A	3(12%)	23(88%)	36%	-24%
B	8(34%)	15(35%)	36%	-2%
C	10(45%)	12(55%)	36%	+9%
D	11(52%)	10(48%)	36%	+16%

Question 5. Is the residence reliant on portable space heaters during the cooler months of the year?

Designation	Responded yes/ (percentage)	Responded no/ (percentage)	Overall mean in % to yes	Difference in overall mean comparison to yes
A	4(15%)	22(85%)	46%	-31%
B	7(30%)	16(70%)	46%	-16%
C	14(64%)	8(36%)	46%	+18%
D	16(76%)	5(24%)	46%	+30%

Question 6. Is the home equipped with burglar bars?

Designation	Responded yes/ (percentage)	Responded no/ (percentage)	Overall mean in % to yes	Difference in overall mean comparison to yes
A	3(12%)	23(88%)	32%	-20%
B	2(9%)	21(91%)	32%	-23%
C	12(55%)	10(45%)	32%	+23%
D	11(52%)	10(48%)	32%	+20%

Question 7. Does anyone in the residence smoke?

Designation	Responded yes/ (percentage)	Responded no/ (percentage)	Overall mean in % to yes	Difference in overall mean comparison to yes
A	11(42%)	15(58%)	47%	-5%
B	12(52%)	11(48%)	47%	+5%
C	11(50%)	11(50%)	47%	+3%
D	9(43%)	12(57%)	47%	-4%

Question 8. Does anyone in the residence drink alcohol?

Designation	Responded yes/ (percentage)	Responded no/ (percentage)	Overall mean in % to yes	Difference in overall mean comparison to yes
A	17(65%)	9(35%)	71%	-6%
B	15(65%)	8(35%)	71%	-6%
C	16(73%)	6(37%)	71%	+2%
D	17(81%)	4(19%)	71%	+10%

Question 9. Are all able adults within the residence employed?

Designation	Responded yes/ (percentage)	Responded no/ (percentage)	Overall mean in % to yes	Difference in overall mean comparison to yes
A	15(58%)	8(42%)	51%	+7%
B	18(78%)	5(22%)	51%	+27%
C	10(45%)	11(55%)	51%	-6%
D	5(24%)	16(76%)	51%	-46%

Question 10. Did all members of the household eligible complete high school?

Designation	Responded yes/ (percentage)	Responded no/ (percentage)	Overall mean in % to yes	Difference in overall mean comparison to yes
A	24(92%)	2(8%)	73%	+19%
B	19(83%)	4(17%)	73%	+10%
C	14(64%)	8(36%)	73%	-9%
D	11(52%)	10(48%)	73%	-21%