

JUVENILE FIRESETTING RESEARCH PROJECT 2000

Children and fire remain one of the most challenging problems facing today's fire service. But it is not a fire service problem alone. It is becoming increasingly clear that when children misuse fire, it is often found to be a manifestation of society's problems. Ownership of juvenile firesetting clearly includes the fire service, but many others as well. But as with any problem faced by society, prevention remains the most important strategy. And at the forefront of prevention is education.

The fire service has offered fire safety education for many years. But during that time, the problem of children misusing fire has grown (at the very least, awareness has better defined the issue). If fire safety education were truly effective, it would seem that a reduction in child firesetting/juvenile arson would result. Perhaps, the fire safety education being delivered is missing the target.

Proper educational methodology begins by identifying the desired outcome. If the outcome is to teach the participant to survive a fire, then skills that equip the student to cope with a hostile fire situation will be key. However, if the desired outcome is to prevent the misuse of fire, the skills that prepare a participant (adult or child) to survive a fire might not provide the necessary understanding of what causes fire to begin.

If it is true that child-set fires are on the rise, or at least holding steady, and that traditional fire safety education is and has been in place for some time, it would lead one to believe traditional fire safety education may be saving lives (fire deaths are on the decrease) but not discouraging children from misusing fire.

With this premise in mind, SOS FIRES: Youth Intervention Programs teamed up with the Institute for Circumpolar Health Studies (ICHS) at the University of Alaska Anchorage to investigate the behavior of child firesetting/juvenile arson. The goal of this project was to better understand the behavior of juvenile firesetting so more effective educational strategies could be developed to overcome the thinking errors children (and adults) make with fire. The results provide some very interesting discussion.

The juvenile firesetting intervention programs of Portland (Oregon) Fire & Rescue and Anchorage (Alaska) Fire Department have collected the data in this project. These programs provide educational intervention to families whose children have experienced a misuse of fire. The firesetting does not necessarily constitute a criminal act nor is it part of a mental health diagnosis. The behavior is identified from a variety of sources which include fire service responders, law enforcement, mental health, juvenile justice, schools, child welfare and concerned parents/caregivers. The program is voluntary (unless an agency other than the fire department requires participation).

Drawing on the developmental age categorization used in the education system, this project clustered children into five age groups: Preschool, age 1-5; Early Elementary, age 6-8; Intermediate Elementary, age 9-11; Middle, age 12-14; and High, age 15-17. If child behavior can be better understood based on a child's ability to learn and comprehend, then

educational intervention can be better presented to meet the safety needs of children and families.

The levels of concern presented in this project are derived from the juvenile firesetting assessment tool developed by the U.S. Fire Administration. All of the children in this report were assigned a level of concern (Little, Definite, or Extreme) using this criteria. A working definition of these categories follows.

Little Concern is a term that means a child's firesetting will most likely be resolved by the presentation of educational intervention. The firesetting behavior is most likely a result of curiosity or lack of information about fire and its consequences. These children usually needed no more service than the juvenile firesetting intervention program offered by the fire department.

Definite Concern is a term for reactionary firesetting. In other words, the child is exhibiting firesetting behavior as a reaction to some type of stress, crisis, or dysfunction occurring within their life. Educational intervention, while important, will probably not resolve the firesetting behavior. Most likely, some type of behavior modification is necessary. This may be mental health intervention, medical treatment, parental intervention or other such assistance. In any case, the services were beyond what the juvenile firesetting intervention program is equipped to offer.

Extreme Concern is a term that is an extension of *Definite Concern*. This category represents children who have an immediate need for some type of intervention beyond education. When a child presents a behavior profile that, coupled with the firesetting behavior, makes it appear likely that the firesetting behavior will continue before the family can access qualified assistance, they are deemed *Extreme Concern* Firesetters. Urgency is the key criteria for this category. This too will require services beyond the juvenile firesetting intervention program.

A variety of findings came from this study. But perhaps the most profound point of discussion that accompanied the research information was the point that "parenting skills" are likely the most important characteristic of all. Many of the data fields, while not necessarily conclusive by themselves, are part of a larger dynamic that involves parenting skills. It was felt that many of these issues were best explained by the parenting dynamic.

Brian Whitney probably put it most succinctly when he cited an article published by the Seattle Times (August 29, 1996) titled *Juvenile Crime/Part 1: Teen Killings On The Rise In Snohomish County*. Through actual interviews with incarcerated youth/young adults, this article relates insight into the factors leading these youth to commit violent and anti-social crimes. The dynamics they cited as most significant include:

1. Access (to weapons)
2. Lack of (appropriate) supervision
3. Few consequences for their actions
4. Limited adult guidance (role modeling)

It is no coincidence that these issues are strong factors when children misuse fire. By developing an understanding and appreciation for the relationship of these factors to child firesetting/juvenile arson, the understanding of this dangerous behavior can be advanced.

The balance of this article was extracted from the SOS FIRES research project titled “Juvenile Firesetting Research Project 2000, An Analysis of Youth Firesetting Behavior.” It includes the data analysis provided by ICHS combined with the experience of a team of SOS FIRES board and advisory committee members who work directly with youth intervention programs. The members are listed below:

- Terry Abrams – North Vancouver (British Columbia) Fire Department
- Lisa Lapsansky – King County (Washington) Fire District #40
- Joe Meinecke – Firestoppers of Pierce County (Washington)
- Pat Mieszala – Burn Concerns Inc. (California)
- Niki Pereira – Anchorage (Alaska) Fire Department
- Don Porth – Portland (Oregon) Fire & Rescue
- Brian Whitney – Bellevue Community Services/CoHear (Washington)

Juvenile Firesetting Research Project 2000: An Analysis of Youth Firesetting Behavior

This report describes data on child firesetting collected in Portland and Anchorage. Portland Fire & Rescue initiated the Portland data set in July 1990 through March 1999.

Method:

Except for questions 16 and 17, the original Portland data was trimmed to include only clients who were interviewed by the fire department and assigned a specific level of concern classification. Table 1 presents the selected Portland cases and the appropriate level of concern/disposition classification status. The trimmed data set was used for all remaining questions regarding the Portland experience.

Table 1. Trimmed Data Set Used for the Portland Report.

		Disposition			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Definite Concern	258	30.7	30.7	30.7
	Extreme Concern	27	3.2	3.2	33.9
	Little Concern	556	66.1	66.1	100.0
	Total	841	100.0	100.0	

The Anchorage data is much more recent and represents data collected from 1995 through 1999. ICHS staff entered all data from the child fire-setting files maintained at the Anchorage Fire Department. The Portland data set was collected and entered by the

Juvenile Firesetting Intervention Program at Portland Fire & Rescue and electronically transported to ICHS. The common variables listed in both the Anchorage and Portland data sets were then merged into one common data set.

A review of the variable fields indicates a substantial lack of comparability between the Anchorage and Portland data sets. The two data sets were not initially developed for analytic purposes and are largely descriptive in nature. Variable spellings and nomenclature between the two data sets were not always consistent. As a result, a substantial amount of data “cleaning” and reconfiguration was necessary to combine the two data sets. Table 2 presents the number of cases included in the combined data set aggregated by disposition status. As can be seen, the Anchorage data did not include a “Disposition” data field consistent with Portland data.

Table 2. Merged Anchorage and Portland Data Set

Disposition * CITY Crosstabulation

Count		CITY		
		Anchorage	Portland	Total
Disposition	Definite Concern		258	258
	Extreme Concern		27	27
	Little Concern	274	556	830
Total		274	841	1115

The combined data set was further trimmed to include only those clients from Portland and Anchorage matched by equivalent incident month and year. Table 3 represents the number of cases utilized for the combined Anchorage/Portland report.

The Combined Anchorage/Portland Report. The combined report will appear at the end of the Portland data presentation. It will provide an analysis of the mean age differences within city, year and city by year. Graphic representations of the mean and median distributions of the Anchorage and Portland data aggregated by year are also provided. Finally, gender distribution comparisons between the two cities was also completed

Table 3. Portland and Anchorage Cohort Data Set Matched by Date of Incident

Disposition * CITY Crosstabulation

Count		CITY		
		Anchorage	Portland	Total
Disposition	Definite Concern		101	101
	Extreme Concern		13	13
	Little Concern	208	283	491
Total		208	397	605

This project originated when eighteen individual questions were asked of the data. ICBS agreed to do the necessary analysis to attempt to answer these questions. Seventeen of the eighteen research questions submitted were accepted. Question 15 was unclear and, therefore, not analyzed. The questions were reviewed, clarified, modified if necessary, and restated before they were listed in the report. What follows is a summary of the statistical analysis provided by ICBS coupled with the commentary of professionals who provide front line intervention services for children identified for the misuse of fire.

Portland Data Only

Question 1. *Does the parent relationship to the juvenile make a difference within age groups and/or levels of concern?*

Frequency distributions representing the type of parental relationship indicate most fire setting behavior is in homes in which a single biological parent is the caregiver, closely followed by homes in which both biological parents provide the care.

Approximately thirty percent (29.8%) of the firesetting population recorded within the Portland data set came from single parent homes with a “Single Biological” parent. Twenty eight percent (28.4%) came from a traditional “Both Biological” parent family. The remainder came from a “Paired Biological” parental or caregiver relationship with at least one biological parent (23%) or a Non-Biological” caregiver relationship (i.e. foster home, grand parent, adoptive relationship) (10.2%). Approximately eight percent of the juvenile firesetting cases did not specify a parental relationship.

Age group distributions indicate the majority of firesetting cases were split evenly between the “6 through 8” (28.1%), “9 through 11” (27.9%), and the “12 through 14” (27.1%) age groups. The age group distributions for the remaining cases were from the “1 through 5” (11.4%), “15 through 17” (5.0%), and “18 and Greater” (.5%) classifications.

Children living with a single biological parent or a biological parent along with a non-related caregiver had a slightly younger median age of eight and a half to nine years. Overall, there appears to be no substantial differences in ages across parental relationship classifications.

The second part of question 1 examines the parental relationships aggregated by levels of concern. The median ages hover around 7-10 years and do not appear to be materially different for various levels of concern. Children identified to be of “Extreme Concern” represented the youngest group while those identified to be of “Little Concern” represent the oldest group.

Firesetting behavior from the “Paired Biological,” “Both Biological,” and “Single Biological” relationship classification had the highest proportion of “Little Concern”. In contrast, firesetting from the “Unknown” and “Non-Biological” parental classifications had the highest proportion of representation within the “Definite Concern” category.

SOS FIRES Commentary:

No significant pattern emerged. The team acknowledged that the quality of parenting is not necessarily predicated upon the structure of the family and that “no significant pattern” would support this theory since the parental structure is not skewed to one configuration or another.

Question 2. Does the “birth parent marital status” make a difference within the age group and/or levels of concern?

Thirty-six percent (35.6%) of the birth parents are classified as “Divorced.” The next most frequent category include children whose birth parents are “Married” (26.6%) followed by “Unmarried” (20.7%), “Not Specified” (9%), and “Widowed/Deceased” (2.9%).

The median age for firesetting behavior in “Separated” and “Unmarried” homes was 8 to 9 years of age. The remaining parental marital classifications indicated the median age as approximately 10 years of age. Firesetting behavior in which parental status was “Not Specified” recorded a slightly older median age (approximately 11 years) that was much broader in the overall age range.

The second part of question two evaluates the marital status of the birth parents by levels of concern. The information indicates that the lowest proportion of firesetting cases in which the level of risk was identified to be “Definite” or “Extreme” were from birth parents who were “Married.” The level of concern was slightly higher for firesetting cases where biological parents were “Divorced” or “Widowed/Deceased.” In contrast, it appears there were generally higher levels of concern for children whose biological parents were “Divorced”, “Separated”, or “Unmarried.” Firesetting cases whose parental marital status was classified as “Not Specified” indicated the highest proportions of “Definite” or “Extreme Concern.”

SOS FIRES Commentary:

As in question #1, no particular pattern emerged. Again, as in the prior question, a measure of parental quality would be needed to fully appreciate whether this parenting dynamic had a significant impact on the behavior.

When looking at the data, it was noted that the likelihood is high that more children in the city of Portland live with their biological parents than the percentage indicated in the data. This was an observation, not a data segment, which could not be measured against the community. If this were fact, then it would indicate that the population of children within this study are more inclined to be from a family where the biological parents are no longer together. In many cases, the parenting quality may be enhanced when the biological parents split and a non-biological parent enters the picture.

Question 3. Does smoking status make a difference within the age groups and/or levels of concern?

Over half (53.9%) of the fire starter population had parents who smoked. The median age is slightly younger for firesetting cases whose parents smoke (approximately 9 years for smoking parents vs. 11 years for non-smoking parents).

A review of the age group proportions within the parent smoker classifications indicates an upward age shift of firesetting from children of non-smoking parents. Firesetting from the children of non-smoking parents is lesser when represented within the 12-14, and 15-17 age groupings as compared to firesetting from children of smoking parents who have greater representation in the 1-5, 6-8, and 9-11 age groupings.

The second part of question three addresses the distributions of firesetting within the smoking status of the parents aggregated by the level of concern. The proportions of firesetting by children of parent smokers are greater within the “Definite” and “Extreme” concern categories.

SOS FIRES Commentary:

The smoking status of the parents/caregivers seems to play a significant role in firesetting behavior. It is particularly apparent in the younger age groupings. The median age of a child who lived in a home with a smoker was 8.5 years. Conversely, the median age of a child who lived in a home with non-smokers was 11.5 years.

The frequency of firesetting drops significantly, as a child grows older. It was felt that access was the largest contributing factor to this trend. Young children are curious and will tend to replicate adult behavior. This becomes even more likely when the items used by adults are accessible. Access was identified as a common denominator to all firesetting behavior. The behavior is summed up below:

- Age 1-5 69.8% live with a smoker
- Age 6-8 64.8% live with a smoker
- Age 9-11 48.9% live with a smoker
- Age 12-14 43.4% live with a smoker
- Age 15-17 45.2% live with a smoker
- Overall 53.9% live with a smoker
- In U.S.A 25% of households have a smoker *

* According to the American Cancer Society Web Site

Additionally, the smoking status of caregivers did not seem to influence the level of concern among firesetting behavior. This supports the idea that the most damaging aspect of parental smoking is the issue of access.

Question 4. Does match or lighter availability makes a difference between age groups or levels of concern?

There were a substantially greater number of firesetting cases where children had access to matches/lighters within every age group. Children who did not have access to

matches/lighters represented a younger median age. It is evident that the majority of the group who had access to matches/lighters was older. This, in effect, drives up the median age. It is interesting to point out that half of the firesetting represented for both groups (the interquartile range) range in age from approximately 7 to 11 years old.

A greater proportion of children are represented within the non-access to matches and lighters classification for the 6-8 and 9 –11 age groupings as opposed to children from the access group. It is interesting to point out that firesetting within the 1-5 age grouping had a greater proportion (12%) of representation with the access to matches/lighter than the non-access group.

There appears to be a greater proportion of fire starters considered to be at “Definite” (32%) or “Extreme “ (3%) concern from the access to matches and lighter group.

SOS FIRES Commentary:

In all cases, the percentage of kids who had access to matches/lighters was about 80%. This can be expected in the 12-14 and 15-17 age group since these kids would likely be able to purchase ignition materials at most stores. Access among younger age groups is a bit more perplexing. This point again raises question to the issue of quality parenting and the dynamics associated with it. It will also provide an on-going theme throughout this commentary.

Question 5. Does the day of the week of the most recent firesetting event make a difference within age groups and levels of concern?

Monday represented the day with the greatest number of fire starting events (16.8% of the cases) and Friday the least (10.6% of the cases). Approximately 11% of the case records did not provide data regarding the day of the incident. The median age distributions are remarkably consistent across the days of the week (approximately 10 years old). The median age for firesetting is slightly younger for “Sunday,” “Tuesday,” and “Friday.”

Firesetting cases from the 6-8 age group have greater representation on Sunday (36%) and Tuesday (32%), while the 9-11 age group is represented on Wednesday (30%) and Saturday (33%). The 12 –14 age group has greater representation on Monday (33%), Tuesday (31%), and Thursday (30%).

SOS FIRES Commentary:

The day of week in which firesetting behavior occurred presented no discernable pattern.

Question 6. Does the time of day make a difference within age group and levels of concern?

The distribution of age group categories was divided across six, four-hour time intervals (*6 to 10 am, 10 am to 2pm, 2 to 6pm, 6 to 10pm, 10pm to 2am, 2 to 6am*). The time interval of 10 am to 2 pm was indicated as the most frequent within the case data. The least frequent time interval was 2 am to 6 am. The time interval of 6 am to 10 am indicated a median age of

approximately 7 years. The oldest median age for fire starters was represented in the 2 am to 6 am time interval. Please note that only 14 cases were represented the 2 am to 6 am intervals.

Firesetting cases within the 6-8 age group have greater representation in the 6 am to 10 am and 10 pm to 2 am time intervals, while firesetting cases from the 9-11 age group are represented in the 2 am to 6 pm and the 6 am to 9 pm time intervals. Firesetting in the 12-14 age group have greater representation within the 10 pm to 2 am and 2 am to 6 am time intervals.

The highest proportion of cases identified with a “Definite” and “Extreme” level of concern had firesetting incidences occurring within the 2 am to 6 am and the 6 am to 10 am time intervals.

SOS FIRES Commentary:

While the time of day at which firesetting behavior occurred showed no particular pattern, some interesting notes were made. The median age as it aligns with the time of day shows some interesting results and is listed below:

- 6 AM to 10 AM median age is 7.5 years
- 10 AM to 2 PM median age is 10 years
- 2 PM to 6 PM median age is 9.5 years
- 6 PM to 10 PM median age is 10 years
- 10 PM to 2 AM median age is 9 years
- 2 AM to 6 AM median age is 12 years
- 2 PM to 6 PM peak time for “Little Concern” Firesetting
- 10 AM to 2 PM peak time for “Definite Concern” Firesetting

While the 10 AM to 10 PM time frame offered a median age range of 9-10 years, it is an interesting contrast to the 6 AM to 10 AM time frame in which the median age is only 7.5 years. Supervision was cited as a possible factor in the younger kids within this age range.

In a final note, almost 43% of the 15-17 year olds set their fires during the 10 AM to 2 PM time period. This is even more interesting when, in a later section, it is found that this same age group tends to perform most of their firesetting in the school setting. Supervision, whether at home or at school, seems to be a factor as significant as access.

Question 7. Does the location of the fire setting make a difference within the age groups and levels of concern?

For reporting purposes, the location descriptors were aggregated into the top nine and bottom ten. The case distributions appear to indicate that younger children start their fires in the bedroom, living/dining/den, and kitchen/laundry areas. Older children appear to start their fires in other/miscellaneous and school areas.

SOS FIRES Commentary:

The location of the firesetting behavior provided some interesting insight. Depending on the age group, the bedroom, school, and yard were top areas of choice. For the 1-5 year and 6-8 year age groups, the bedroom was the top location of choice. The 1-5 year olds followed with the living room/den/dining room while the 6-8 year olds had the yard in second place. The top location of choice for the 9-11, 12-14, and 15-17 age groups became the school. The yard remained number two in the 9-11 and 12-14 year age groups. Almost 73% of the 15-17 year olds chose the school with no other location having significant enough numbers to call second.

It makes sense that the youngest group would choose the bedroom for their behavior. This is a place where they can operate independently and be alone without suspicion. Their second choice (living room/den/dining room) is also within the home in areas where a child's presence is easy and expected. Much speculation has always surrounded the closet as a place of choice for firesetting. In this sample, the median age for fire set in closets was 5 years. Regarding the level of concern, the closet did not represent substantial enough numbers to warrant recognition.

The median age for firesetting in the bedroom was 7 years. This is consistent with the 1-5 and 6-8 age groups choosing the bedroom as their first choice for firesetting. Again, these kids are limited in their mobility.

The level of involvement in the school grew as children grew older. The pattern showed as follows:

- 9-11 years 25.9% in schools
- 12-14 years 47.4% in schools
- 15-17 years 72.7% in schools

As was seen in the section on "Time of Day," the 12-17 year age groups also choose the lunch hour (10 AM to 2 PM) as their time of choice for firesetting. This would indicate that the unsupervised time at school might prove to be a high-risk time for these youths. It might also illustrate the importance of the fire service maintaining a presence in schools in these older age groups, (which currently does not occur in this sample of children).

The Little Concern firesetting occurred in the school one-third of the time. This may be an example of peer pressure at work coupled with a lack of formal rules about fire in school being presented to students.

For Definite Concern firesetting, the bedroom was the first choice one-third of the time. This same pattern held for Extreme Concern Firesetting. There may be many reasons for this, which could include acting out toward authority, power and control issues, and invasion of privacy.

Question 8. Does ignition source make a difference within age groups and levels of concern?

All non-lighter and non-match classifications were collapsed into the other category. The “Not Indicated” category represents case records in which no ignition source data were recorded. Approximately half (46.7%) of the firesetting cases were reported using a lighter as the ignition source. The match appears to be the ignition source for cases within the age categories of 6-8 years and 9-11 years. Cases with ages within the 12-14 year category indicated a preference for using a lighter.

There is very little difference in the proportional distributions between levels of concern for firesetting cases that use matches, lighters or other sources of ignition.

SOS FIRES Commentary:

The ignition source offers some interesting perspective on match and lighter use. The median age for match use was 8 years while the median age for lighter use was 10. To truly appreciate this dynamic, a review of the following chart is needed:

- 1-5 years 64.6% lighters 20.8% matches
- 6-8 years 40.3% lighters 50.4% matches
- 9-11 years 35.3% lighters 54.0% matches
- 12-14 years 51.8% lighters 39.0% matches
- 15-17 years 76.2% lighters 14.3% matches

As can be seen, the youngest age group seems to prefer lighters. This is likely due to the dexterity necessary to manipulate a match that children this age do not possess. It is also obvious that the older groups, particularly the 15-17 year group clearly prefer lighters. For efficiency of use, lighters would seem to be the clear choice. There is also a certain social stigma of “coolness” that accompanies the possession and use of such items.

The 6-8 and 9-11 year age groups are the only ones to prefer matches to lighters. This may be due to the way in which children learn at that age. Hands on learning is an important part of child development. And while lighters are, perhaps, the most efficient means of initiating a fire, matches may be the most fascinating ignition source of the two. So for kids who are highly invested in exploring their environment and attempting to learn from it, matches may be the item of greater interest.

In the levels of concern, the breakdowns are as follows:

- Little Concern 44.6% lighters 46.6% matches
- Definite Concern 49.2% lighters 38.0% matches
- Extreme Concern 66.7% lighters 18.5% matches

The increase in lighter use corresponding with the increase in the level of concern may be due to the efficiency aspect of the lighter in relation to the match. As stated earlier, if lighters are more efficient, then it would be the best choice if firesetting were done for a purpose, as is often the case with Definite and Extreme Concern firesetting behavior.

Question 9. Does item ignited make a difference within age groups and levels of concern?

The rank order distribution of the top and second nine items ignited categories were aggregated by age group.

SOS FIRES Commentary:

The item ignited appears to be insignificant. However, a more in-depth examination of the data may show otherwise. Every age category and every level of concern category shows “Paper” as the preferred item to ignite. Because this data is derived only from children who were interviewed by a program representative, an above average level of detail is incorporated into the data. As an example, a fire report will often show a piece of furniture as the item ignited. Upon interviewing a child, it is found that they had lit a piece of paper that was then dropped behind the couch, subsequently igniting the couch. Therefore, this database in which this information is housed will show the item ignited to be paper while an official fire report will indicate a couch (furniture) being the first item ignited.

This detail would imply that much of the firesetting might not be as purposeful as one would otherwise believe. That while the act of using the ignition source is intentional, the ignition of other items may not be.

Other findings include the following:

- Median age for igniting aerosol spray – 12 years
- Median age for igniting bedding/clothing – 7 years
- Median age for igniting fireworks – 11 years
- Median age for igniting matches/lighters only – 9 years

Question 10. Does the responsible caregiver at the time of the incident make a difference within age groups and levels of concern?

The top three supervision categories were “Adult/Caregiver” (47.7%), “None” (22.6%) and “School” (17.1). The age distributions suggest that parents, adults, or family members supervise younger children while older kids are not supervised, at school or within some “Other” supervision environment. .

SOS FIRES Commentary:

In another issue representative of the parenting dynamic, the responsible caregiver at the time of the incident shows some interesting patterns. The 1-5 year age group is overseen by a parent/caregiver almost 70% of the time. This leads to questions about proper supervision and access to matches/lighters. Clearly, there is a lack of both, which is likely driven by an adult’s disregard for the dangers of fire in the hands of children.

The 6-8 year age group was under the care of a parent/caregiver 61.4% of the time. Supervision was absent in 10.2% of the cases and the school was the supervisor 6.4% of the time. Again, parenting must be questioned in these cases.

The 9-11 age group is supervised by the parent/caregiver 43.0% of the time. In this age group, the unsupervised firesetting rose to almost 22% while the firesetting in schools rises to 15.3%. This seems consistent with the independence given children at this age but still leaves in question the parenting issues leading to the common elements of access to dangerous tools and appropriate supervision.

In the 12-14 age group, the parent/caregiver supervision continues to drop to 17.5% of the firesetting incidents. The unsupervised firesetting almost doubles to 39.5% and the incidents in schools jumps to 33.8%. The trend continues in the 15-17 age group with parent/caregiver at 11.9%, unsupervised to 47.6%, and school supervision at 35.7%. In both these age groups, the school supervision (or lack of it) seems consistent with the earlier findings showing the school as a major location of choice for these same age groups.

Regarding the level of concern, the following results were seen:

- Little Concern Parent/caregiver 40.1% unsupervised 22.1% school 19.1%
- Definite Concern Parent/caregiver 45.7% unsupervised 24.4% school 13.6%
- Extreme Concern Parent/caregiver 66.7% unsupervised 14.8% school 11.1%

As the level of concern rises, so does the supervision by the parent. This, again, seems to add commentary about the parenting dynamic. It would seem logical that the higher the level of concern a child exhibits, the more attentive would be the parent. Perhaps this is implying that the lower the skill level of the parent, the more problematic will be the behavior of the child.

In a final point, the following observations were made:

- Median age of child supervised by parent/caregiver – 8 years
- Median age of child unsupervised – 12 years
- Median age of child supervised by the school – 12 years

Schools continue to play a vital role in the intervention continuum and appropriate supervision of young children is critical.

Question 11. Does the presence of associates/peers that were involved in the incident make a difference within age group or level of concern classifications?

The 6-8 and 9-11 age categories were represented equally in the “No” category while the “Yes” category was evenly represented by the 6-8, 9-11, and 12-14 age groupings. Although the 12-14 age group has the highest proportion of firesetting in which others were associated with the incident, the 6-9 and 9-11 age groups were also strongly represented.

The “No” category represents higher proportions within the “Definite” and “Extreme” Categories.

SOS FIRES Commentary:

Whether an associate is involved in the firesetting behavior was also examined here. The results are interesting. The median age for a child firesetting with an associate was 10 years. Without an associate was 9 years. A clear progression in this dynamic can be seen below:

- | | | |
|---------------|-------------------|---------------------|
| • 1-5 years | w/associate 36.5% | w/o associate 63.5% |
| • 6-8 years | w/associate 51.7% | w/o associate 48.3% |
| • 9-11 years | w/associate 55.7% | w/o associate 44.3% |
| • 12-14 years | w/associate 66.2% | w/o associate 33.8% |
| • 15-17 years | w/associate 76.2% | w/o associate 23.8% |

Peer pressure is a powerful force affecting kids. The ages in which peer pressure is most pervasive (12-17 years) seems to clearly show an increase in involvement of others. The level of concern also shows an interesting pattern. It is shown below:

- | | | |
|--------------------|-------------------|---------------------|
| • Little Concern | w/associate 62.2% | w/o associate 37.8% |
| • Definite Concern | w/associate 45.7% | w/o associate 54.3% |
| • Extreme Concern | w/associate 33.3% | w/o associate 66.7% |

Little Concern firesetting is most often performed with an associate. As the level of concern rises, so does the likelihood that the child will act alone. This is consistent with the theories that Definite and Extreme Concern firesetting often occurs among children who are socially isolated or operate as loners.

Question 12. Does a referral to other agencies correlate to age levels or the level of concern?

“Referral Status” is used to represent the child being referred to another agency or if the child was currently involved with an agency. There appears to be an upward age group shift from the “Yes” to the “Already Involved” classifications.

The “Yes” category represented much higher proportions within the “Definite” and “Extreme” categories of concern, while the proportions of “Little” and “Definite” concern were equally distributed within the “Already Involved” category.

SOS FIRES Commentary:

At the conclusion of the intervention, a child has typically completed the necessary intervention, been referred to additional services, or is already receiving services that can provide the needed assistance to the child/family. What’s most interesting is not how many are referred for services or not referred for services, but how many are already receiving services at the time the firesetting intervention is provided. The patterns are shown below:

- 1-5 years referred 16.7% not referred 53.1% already referred 30.2%
- 6-8 years referred 8.9% not referred 54.2% already referred 36.9%
- 9-11 years referred 8.5% not referred 47.7% already referred 43.4%
- 12-14 years referred 7.5% not referred 38.2% already referred 54.4%
- 15-17 years referred 0% not referred 19.0% already referred 81.0%

A very high percentage of the 15-17 age group are already involved in services of some kind. While this is of benefit when connecting them to services that are needed, one must wonder if there is any significance to the fact that so many of these older kids are involved in services prior to (or during) firesetting involvement. This seems to add credence to the idea that firesetting is often a form of “acting out” that is frequently accompanied by other behavioral issues. When the levels of concern are considered, the patterns seem to support this theory.

- Little Concern referred 1.3% not referred 65.3% already referred 33.3%
- Definite Concern referred 22.5% not referred 8.9% already referred 68.6%
- Extreme Concern referred 40.7% not referred 0% already referred 59.3%

The level of concern offers some indication of the likelihood a child will be involved in services, which supports the prior discussion.

Question 13. Does the repeat referral classification make a difference within the age groups or levels of concern?

The median ages hover around 9 to 10 years and appear to be similar across the three classifications. Firesetting cases that are not re-offenders are slightly younger. An equal distribution of the 6-8, 9-11 and 12-14 age categories are evident in the non re-offender classification. A higher representation of the 9-11 age category is represented in the re-offender classification.

The case population identified as repeaters have a larger proportion of cases assigned the “Definite” and “Extreme” concern level.

SOS FIRES Commentary:

Children are sometimes referred back to the program at a later date due to continued firesetting behavior. When this occurs, concern arises about the effectiveness of the intervention services.

If intervention services are sound, it would be expected that no future firesetting behavior would occur. Since intervention is more of an art than a science, some recidivism is to be expected, but how much?

In the case of definite or extreme concern firesetting, success is often contingent upon the follow through by the parent/caregivers. This supports the on-going theory that parenting

skills are a critical component. If parenting skills are, in fact, lacking, then it might be expected that families needing additional services would have a poor follow through rate. Recidivism does rise with the level of concern.

- | | | |
|--------------------|--------------|------------------|
| • Little Concern | repeat 4.5% | non-repeat 95.5% |
| • Definite Concern | repeat 18.0% | non-repeat 82.0% |
| • Extreme Concern | repeat 40.7% | non-repeat 59.3% |

Clearly, greater success can be expected, and is shown, with Little Concern firesetting behavior since the extent of the intervention can be provided at the time this information was gathered. Overall, the recidivism rate for repeat referrals was 9.8%. Additionally, the 9-11 age group was twice as likely to continue firesetting as the other age groups.

Question 14. Is there a difference in the continued use of fire after follow-up within age groups or levels of concern?

Firesetting cases that were classified within the 9-11 age classification represented the largest group (40.0%) indicated to continue to use fire.

Higher and equivalent proportions of cases identified as “Definite” and “Extreme” concern were evident within the “Yes” and “Not Specified” continued fire use categories.

SOS FIRES Commentary:

Recidivism can also be measured by means other than that is question #13. In this case, it was done in a survey of program participants, four months after the intervention services were provided. The results were similar, as they should be.

- | | | |
|--------------------|--------------|------------------|
| • Little Concern | repeat 5.7% | non-repeat 94.3% |
| • Definite Concern | repeat 11.7% | non-repeat 89.2% |
| • Extreme Concern | repeat 50.0% | non-repeat 50.0% |

The overall recidivism rate at the time of the four-month follow-up was 7.5%. This is 2.3% better than that measured in the repeat behavior measure in question #13. This is likely due to the shorter time period of measure. The repeat behavior measure will often be considering children who have been through the program a year or two before. Also, the recidivism rate is highest in the 9-11 age group.

Question 15. Question 15 was not addressed in the study.

Question 16. Estimate the long-term effectiveness of the program. What are the rates of repeat-referral (re-offenders) over time?

This question was developed with two distinctive differences from the other questions. First, all available cases were utilized to develop the tables and figures. Second, in order to estimate the percent of re-offenders over time, a time interval was developed using the case number. The case numbers, which are assigned in temporal order, have dates embedded

within the sequence. As a result, the case number can be sorted and aggregated in to discrete yearly time intervals. The incident years of 1995 and 1997 are indicated to have the highest proportion of repeat offenders.

SOS FIRES Commentary:

No discernable patterns were noted in this data.

Question 17. Is the overall rate of recidivism and recidivism rates over time different for fire starters for whom agency contact was made?

The data was trimmed to include years (1992-1998) with complete data. There appears to be no substantive differences indicated regarding the rate of re-offence for fire starters that did or did not contact the agency.

SOS FIRES Commentary:

No discernable patterns were noted in this data.

Question 18. Has the rate of female fire starters changed over time? Are females more active now than in earlier time periods?

The overall average of female offenders is 14.3%. There appears to be a high degree of variability of female offenders per time interval but there is no indication of systemic or consistent female offender rates over time.

SOS FIRES Commentary:

A statement that is sometimes heard refers to a rising number of girls involved in firesetting behavior. This question attempted to address this by reviewing the facts. While the yearly percentage varied from a low of 12% to a high of 18%, the overall percentage of girls involved with firesetting behavior has not changed significantly over time and averaged 14.3%.

Conclusion

This portion of the report presents some insight into a program that has been in existence since January of 1986. The data has been meticulously collected and professionally prepared by the Institute for Circumpolar Health Studies. While it is not intended to represent the child firesetting/juvenile arson problem in every community, it certainly might. Only similar research performed in other communities will determine that.

To reflect back on the characteristics shared by the incarcerated youth, that led to their delinquency, the issue of *Access* and *Lack of Supervision* are clearly evident in this data. These are critically important aspects of quality parenting. While the data does not share comment on the issues of *Lack of Consequences* and *Lack of Positive Role Modeling*, anecdotal information led the reviewers to believe that these too are critical areas that are not present for these children.

Expectations for safe behavior and consequences for dangerous fire behavior may also be lacking in the schools. Positive role modeling by members of the fire service might also prove beneficial at the upper grade levels in addition to the more traditional involvement in the lower grades.

And finally, intervention programs can take stock in the knowledge that there are clues to the behavior that provide hope for success and support. This understanding can allow programs to advance another step toward creating a safer tomorrow for children everywhere.

The following section offers comparisons between the Portland and Anchorage. The comparisons are few since no standard of data collection has yet to be developed. Hopefully, this report will help prove the value of common and well-collected data and how it can benefit a community wishing to address child firesetting/juvenile arson.

Portland – Anchorage Report

The comparative analysis of the Portland and Anchorage data sets was limited due to the limited number of matched variables. This report will focus on a comparison of fire starter ages across cities and the four years (1995 through 1998) in which data are available.

The number of cases available for analysis was reduced primarily due to restricting and matching the two city's data to equivalent years. The number of cases in the original combined data set was 1,115. In comparison, only 526 cases are available for analysis.

Evaluating the differences of firesetting age between the year of an incident and the city was completed utilizing General Linear Modeling (GLM). This is an analytic procedure similar to multiple regression commonly used to compare and model differences across groups in which there are unequal number of cases and/or unknown variability within each category (unbalanced designs).

The analytic question is:

Is there a significant difference in the average age of firesetting children aggregated by city, year of incident, and city by year of incident? Listed in Table 4 are the average fire starter ages aggregated by city, year and city by year.

Table 4. Average Fire Starter Age by City, Year, and City by Year

Descriptive Statistics

Dependent Variable: JAGE

CITY	Year of Incident	Mean	Std. Deviation	N
Anchorage	1995	9.20	3.59	35
	1996	8.19	3.82	31
	1997	8.54	3.05	48
	1998	9.05	3.23	59
	Total	8.79	3.36	173
Portland	1995	10.00	3.25	66
	1996	9.49	3.22	102
	1997	10.35	3.07	96
	1998	9.56	3.48	89
	Total	9.84	3.26	353
Total	1995	9.72	3.37	101
	1996	9.19	3.40	133
	1997	9.75	3.17	144
	1998	9.36	3.38	148
	Total	9.49	3.33	526

The comparison of the estimated means within the full model indicated significant differences in the age of fire starters, $F=2.6$ (7,518) $p < .05$. Further analysis identified the estimated mean age differences were between “Anchorage and Portland,” $F=12.43$ (1,518) $p < .05$. There were no differences found in the estimated mean ages between “Year,” $F=.95$ (3,518) $p > .05$ or within “City by Year,” $F=.97$ (3,518) $p > .05$.

The average and median fire starter age distributions by city are presented in Figure 5.

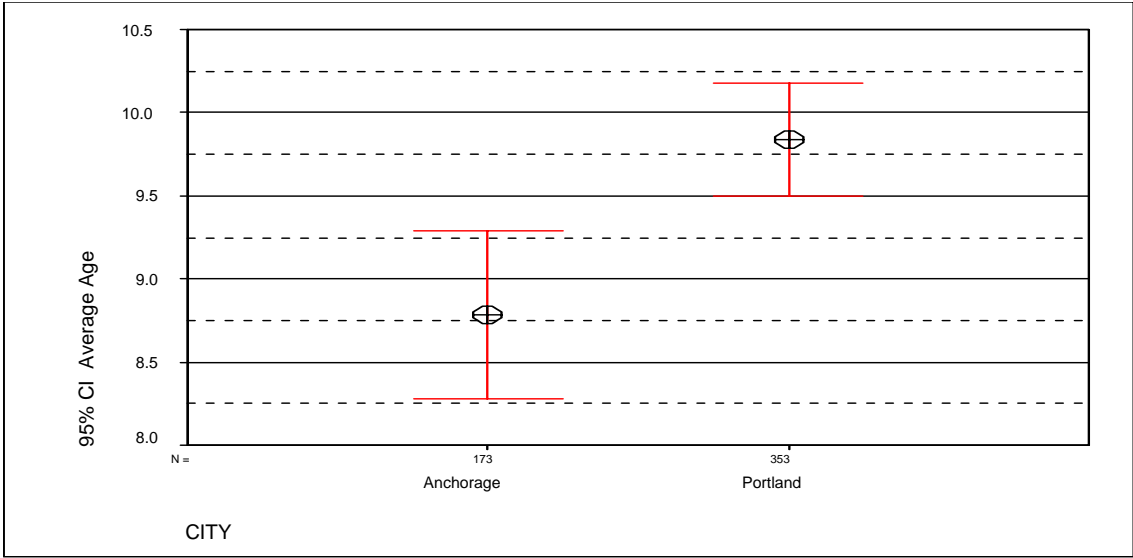
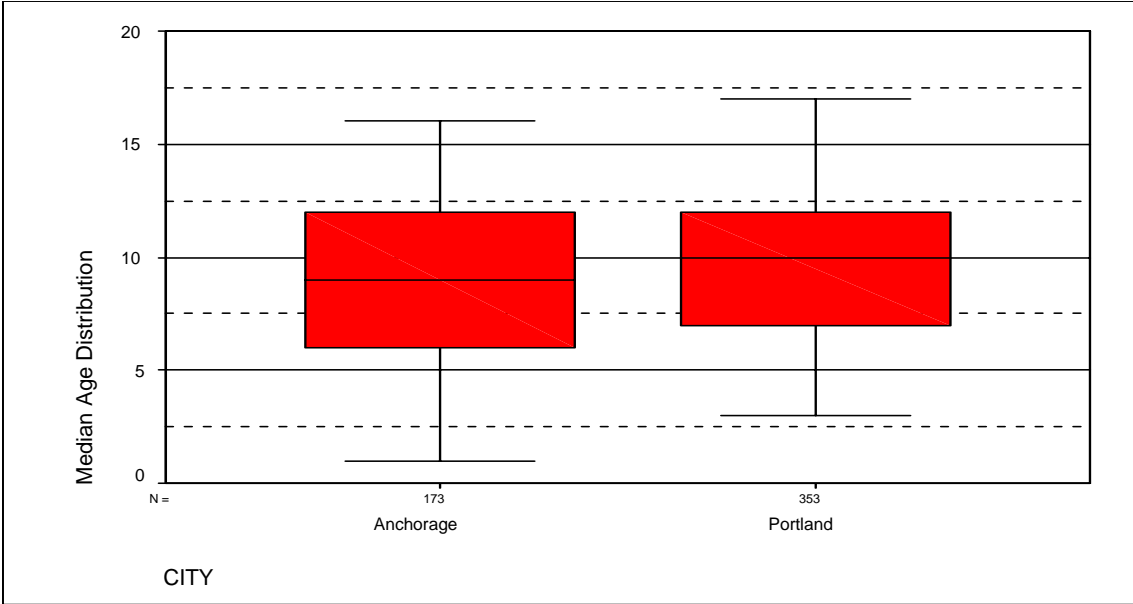


Figure 5. Average Fire Starter Age by City



Gender Distributions

Table 6 presents the gender distribution characteristics for Portland and Anchorage. An evaluation of the proportional gender distributions between the two cities for the years of 1995 through 1998 did not indicate a significant difference, chi-square (1, N=526) = .44, p. >.05.

Table 6. Fire Starter Gender Distributions by City

		CITY * GENDER Crosstabulation			
		FEMALES			
		Male	Female	Total	
CITY	Anchorage	Count	143	30	173
		% within CITY	82.7%	17.3%	100.0%
		% within FEMALES	32.2%	36.6%	32.9%
		% of Total	27.2%	5.7%	32.9%
	Portland	Count	301	52	353
		% within CITY	85.3%	14.7%	100.0%
		% within FEMALES	67.8%	63.4%	67.1%
		% of Total	57.2%	9.9%	67.1%
	Total	Count	444	82	526
		% within CITY	84.4%	15.6%	100.0%
		% within FEMALES	100.0%	100.0%	100.0%
		% of Total	84.4%	15.6%	100.0%

Figure 7, provides a graphic representation of the fire starter gender distribution between Anchorage and Portland.

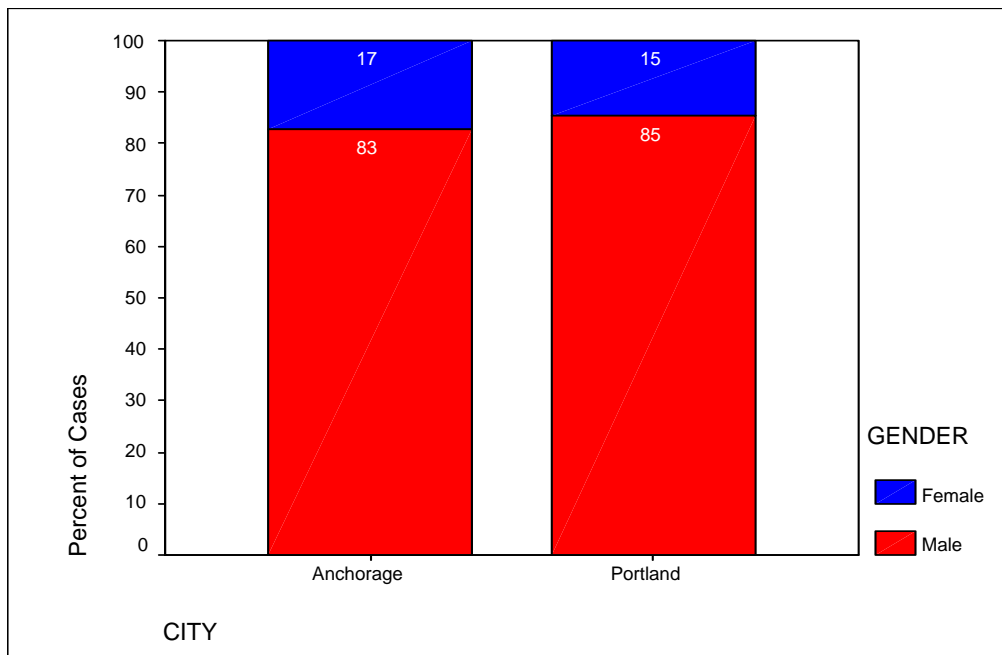


Figure 7. Proportional Gender Distributions by Fire Starter City

CONCLUSIONS

While different, the samples from Portland and Anchorage offer some similarities. At the inception of this project, it was hypothesized that firesetting behavior was similar, despite geographic variation. Differences in the behavior would be more readily attributed to influences such as climate and culture rather than a difference in the fundamental behavior. Unfortunately, the data sets did not compare as favorably as was hoped.

This very problem supports one of the most fundamental problems identified by juvenile firesetting intervention programs across North America. That is the problem of appropriate and quality data collection. This subject has been the topic of much debate and to-date, has not been resolved. SOS FIRES: Youth Intervention Programs will be addressing this issue as an outcome of this research project. It is hoped that the results will continue to advance the level of knowledge in this arena.