

# **Estimation of Average Daily Population and Peak Population Levels During Special Events in Hays, Kansas**

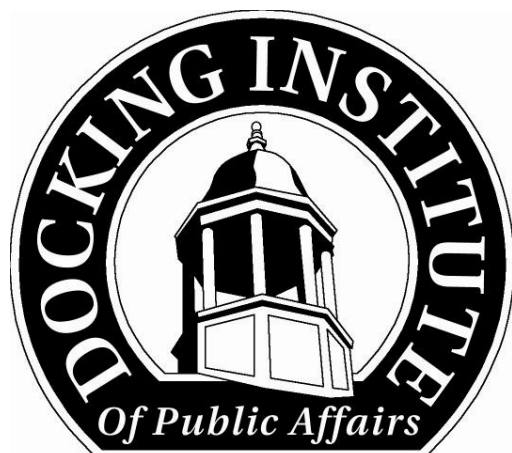
**Fort Hays State University  
600 Park Street  
Hays, Kansas 67601**

**May 2010**

Prepared For  
**City of Hays**

By

**The Docking Institute of Public Affairs  
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**Fort Hays State University**

600 Park Street

Hays, Kansas 67601-4099

Telephone: (785) 628-4197

FAX: (785) 628-4188

[www.fhsu.edu/docking](http://www.fhsu.edu/docking)

Gary Brinker, PhD  
Director

Michael S. Walker, MS  
Assistant Director

Jian Sun, PhD  
Research Scientist

Leslie Paige, MS, EdS  
Grants Facilitator

Joyce Wolfe, MS  
Research Scientist  
Survey Center Manager

Marilyn Ray, MD, MPH  
Research Scientist

Lynette Pfeifer  
Administrative Assistant

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To Facilitate Effective Public Policy Decision-Making.

The staff of the Docking Institute of Public Affairs and its University Center for Survey Research are dedicated to serving the people of Kansas and surrounding states.

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## **Prepared By:**

Jian Sun, PhD  
Research Scientist

Gary Brinker, PhD  
Director

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## Executive Summary

The City of Hays contracted the Docking Institute of Public Affairs at Fort Hays State University to estimate the number of persons in the City of Hays on an average day in addition to the permanent residents of Hays and the total number of persons in the City of Hays during the following five sports events: a) the State 2-1A High School Football Championship Game on November 28, 2009, b) the Hays City Shootout during December 3 to 5, 2009, c) the 3-2-1A State High School Wrestling Tournament on February 26 and 27, 2010, d) the 1A State Boys and Girls High School Basketball Tournament during March 9 to 12, 2010, and e) the Special Olympics Basketball & Cheerleading Tournament during March 18 to 20, 2010.

The Docking Institute designed three surveys in order to make the proposed estimates: 1) a telephone survey of residents in the nine-county region comprising Ellis County (excluding the City of Hays) and eight counties contiguous with Ellis County (Barton, Graham, Ness, Osborne, Rooks, Rush, Russell, and Trego Counties), 2) a face-to-face survey of attendees to each one of the five sports events, and 3) a mail survey of Hays residents. Using the data from those surveys and the U.S. Census, the Docking Institute estimates:

- There are 27,284 people in Hays on an average day, including Hays residents, non-Hays residents who travel to Hays for any reason from the nine-county region and those non-Hays residents who stay in local hotels/motels on an average day.
- There were 32,916 people in Hays on the day when the State 2-1A Football Championship was hosted.
- There were 29,983 people in Hays on the peak attendance day of the Hays City Shootout.
- There were 37,192 people in Hays on the peak attendance day of the 3-2-1A State Wrestling Tournament.
- There were 35,614 people in Hays on the peak attendance day of the 1A State Basketball Tournament.
- There were 32,319 people in Hays on the peak attendance day of the Special Olympics.
- On an average day, 5,515 people travel to Hays from the nine-county region for any reason.
- On an average day, 3,580 people travel to Hays from the nine-county region for shopping or retail trade.
- On an average day, 699 people travel to Hays from the nine-county region to see a doctor, dentist, hospital or other health service provider.

- On an average day, 1,605 people travel to Hays from the nine-county region to work.
- On an average day, 619 people travel from the nine-county region to attend school in Hays.
- On an average day, 1,359 visitors stay in hotels and motels in Hays.
- A total of 6,742 people attended the State 2-1A Football Championship, including 1,110 Hays residents, 30 people who stayed in motels/hotels, 130 people who stayed with friends/family in Hays, and 5,472 people who came to Hays for the day.
- A total of 4,838 people attended the Hays Shootout, including 2,139 Hays residents, 241 people who stayed in motels/hotels, 174 people who stayed with friends/family in Hays, and 2,284 people who came to Hays for the day.
- A total of 12,097 people attended the 3-2-1A State Wrestling Tournament, including 830 Hays residents, 5,456 people who stayed in motels/hotels, 237 people who stayed with friends/family in Hays, and 5,574 people who came to Hays for the day.
- A total of 9,476 attended the 1A State Basketball Tournament, including 1,146 Hays residents, 1,172 people who stayed in motels/hotels, 150 people who stayed with friends/family in Hays, and 7,008 people who came to Hays for the day.
- A total of 7,855 attended the Special Olympics, including 1,461 Hays residents, 4,285 people who stayed in motels/hotels, 332 people who stayed with friends/family in Hays, and 1,777 people who came to Hays for the day.



## **Research Objectives**

The City of Hays, Kansas regularly draws non-residents from the adjacent rural areas who come to work, shop, visit friends, or conduct other activities. The city also hosts several major events that attract large numbers of people from around the state. These visitors utilize roads, police and fire departments, water, sewers and other services, adding to the demand on the infrastructure. In order to adequately provide these services and plan for emergencies, in November 2009, the City of Hays contracted the Docking Institute of Public Affairs at Fort Hays State University to estimate the average daily population level and peak population levels during some of the major special events. Specifically, the city wanted to find out: 1) the number of persons in the City of Hays on an average day in addition to the permanent residents of Hays, and 2) the total number of persons in the City of Hays during the following five sports events: a) the State 2-1A High School Football Championship Game on November 28, 2009, b) the Hays City Shootout during December 3 to 5, 2009, c) the 3-2-1A State High School Wrestling Tournament on February 26 and 27, 2010, d) the 1A State Boys and Girls High School Basketball Tournament during March 9 to 12, 2010 and e) the Special Olympics Basketball & Cheerleading Tournament during March 18 to 20, 2010.

## **Methods**

The Docking Institute designed mathematical models in order to accomplish those two goals. The data required for the models were collected using three surveys: 1) a telephone survey of random residents in a nine-county region where Ellis County is in the center, 2) a face-to-face survey of random attendees to each one of the five sports events, and 3) a representative mail survey of Hays residents.

The regional telephone survey collects data to accomplish the first goal of the research project: estimating the number of people who travel to Hays regularly on an average day. To capture the majority of the population who travels to Hays (seat of Ellis County) for work, medical and dental services, retail trade and attending school, the Docking Institute surveyed a sample of households in Ellis County (excluding the City of Hays) and eight counties contiguous with Ellis County, including Barton, Graham, Ness, Osborne, Rooks, Rush, Russell, and Trego Counties. The survey asked if respondents or any household members travel to Hays at least once a year. For anyone who responded yes, the survey continued by asking how often the respondent travels to Hays for any reason, for a shopping trip or a trip to purchase goods and services within

Hays, for health services, for work, or for attending school. The survey then went on to ask the respondent to estimate how often additional members of their household traveled to Hays for each of these reasons. This method allowed estimates for how often all household members traveled to Hays. The telephone survey instrument is shown in Appendix 1. From December 14, 2009 to March 1, 2010, the Docking Institute randomly called 635 households in the nine-county region (excluding the City of Hays), and received valid answers from 404 households. The response rate is 63.6%. At a 95% confidence level, the margin of error for the full sample of 404 is  $\pm 4.88\%$ , assuming no response bias. A margin of error of  $\pm 4.88\%$  means that there is a 95% probability that findings among the sample vary no more than 4.88% in either direction from the value that would be found if the full population of interest could be studied, assuming no response bias.

Face-to-face surveys of attendees to the five sports events and the mail survey of Hays residents are designed to accomplish the second goal: estimating the total number of people in Hays during each of the five sports events. Face-to-face surveys were conducted on the day(s) the events were hosted. Attendees of the event were randomly selected and asked if he/she was a Hays resident, stayed/would stay in a hotel or motel, stayed/would stay with family/friends in Hays, or just drove in for the day. The face-to-face survey instrument is shown in Appendix 2. The Docking Institute surveyed 674 people who attended the State 2-1A High School Football Championship Game on November 28, 2009. The margin of error for the full sample of 674 is  $\pm 3.77\%$ , assuming no response bias. A margin of error of  $\pm 3.77\%$  means that there is a 95% probability that findings among the sample vary no more than 3.77% in either direction from the value that would be found if the full population of interest could be studied, assuming no response bias. Five hundred and two (502) people were surveyed at the Hays City Shootout, resulting in a margin of error of  $\pm 4.37\%$ , assuming no response bias. Two hundred and four (204) people were surveyed at the 3-2-1A State High School Wrestling Tournament; the margin of error of the full sample of 204 is  $\pm 6.86\%$ . Six hundred and ninety-five (695) people were surveyed at the 1A State Boys and Girls High School Basketball Tournament; the margin of error of the full sample of 695 is  $\pm 3.72\%$ . Four hundred and seventy-four (474) people were surveyed at the Special Olympics; the margin of error of the full sample of 474 is  $\pm 4.5\%$ .

The mail survey of Hays residents was sent to a random sample of 1,500 households in a region containing three census tracts, where the City of Hays is centered. The survey first asked each respondent if he/she lives within or outside of the city limit of Hays. It then asked if any

member(s) of the respondent's household attended those five sports events, and if so, how many member(s) attended each event. The survey instrument is shown in Appendix 3. Survey questionnaires were mailed out on March 24, 2010. By April 22, 2010, the end of the data collection period, one questionnaire was returned as undeliverable, and 797 questionnaires were returned and completed. The response rate is 53.2% (797/1499). Among those 797 completed questionnaires, 718 were from households that are within the city limit of Hays. The margin of error of the full sample of 718 is +/- 3.66%.

### **Estimation of Average Daily Population in Hays**

The regional telephone survey collected data to compute the average number of people each day who travel to Hays for any reason, retail trade or shopping, medical and dental services, work, and education. These are some of the major reasons for people to make regular trips. The person who was surveyed on the phone answered for every household member whether each travel to Hays for any reason, retail trade or shopping, medical and dental services, work, and education, and how often they travel for each reason. Using the survey data, the number of people in *each household* who visit Hays for any reason or one specific reason on each day (V1) is calculated by Equation 1:

$$\begin{aligned} V1 = & \text{number of visits per day of household member 1} + \text{number of visits per day of household member 2} \\ & + \text{number of visits per day of household member 3} + \dots \text{number of visits per day of household member } n \end{aligned} \quad (1)$$

For instance, a respondent in the survey indicated that three members in his/her household visit Hays for shopping. He/she visits Hays for shopping twice a week. The second household member visits Hays four times a week for shopping, and the third household member visits Hays three times a week for shopping. According to Equation 1, mathematically, the number of people in his/her household who visit Hays for shopping on each day is  $(2/7) + (4/7) + (3/7)$ , that is, 1.28 people per day from that household.

The Docking Institute surveyed 404 households in the nine-county region. After V1 is calculated for each one of those 404 households, the number of people *per household* who visit Hays for any reason or a specific reason on an average day (V2) is calculated by Equation 2:

$$V2 = \text{sum of } V1 / 404 \quad (2)$$

For instance, the sum of the number of people in *each household* who visit Hays for shopping on each day is 56.71. Mathematically, it means that in all those 404 households, a total of 56.71 persons visit Hays for shopping on an average day. The average number of people per household who visit Hays for shopping on an average day is thus 0.1404 (56.71/404) mathematically.

After V2 is calculated, the average total number of people who visit Hays from the nine-county region (excluding Hays) for shopping each day (V3) can be obtained by Equation 3. This method is used to calculate the average number of people who visit Hays for each specific reason, as well as for any reason.

$$V3 = V2 * \text{total number of households in the nine-county region (excluding Hays)} \quad (3)$$

Using census data, it is estimated that there were 25,507 households in the nine-county region (excluding Hays) in 2009 (see Appendix 4 for estimation of the total number of households in the nine-county region). The estimated results for V3 are shown in Table 1. On an average day, 3,580 people travel to Hays from the nine-county region for shopping or retail trade, 699 people travel to Hays to see a doctor, dentist, hospital or other health service provider, 1,605 people travel to Hays to work, and 619 non-residents regularly attend school in Hays. It should be noted that a person could make a trip to Hays for multiple purposes. For example, a person could come to Hays to work and do some shopping after work. The survey asked respondents how often their household members travel to Hays for *any reason*. It is estimated that on an average day 5,515 people travel to Hays from the nine-county region for any reason.

Besides those people who travel from adjacent counties for shopping, health service, work, and school, overnight visitors who stay in hotels and motels in Hays constitute another big population of non-residents. According to the estimation of Hays Convention and Visitors

Bureau, there are 495,852 overnight visitors who stay in hotels and motels in Hays every year. Dividing this number by 365, we estimate that about 1,359 visitors stay in hotels and motels in Hays on an average day.

**Table 1: Estimated Numbers of People Who Travel to Hays on An Average Day for Various Reasons**

	Aggregate number of people who go to Hays per day in the sample (sum of V1)	Number of people per household going to Hays on an average day (V2)	Number of households in the nine-county region (excluding Hays)	<b>Total number of people who travel to Hays on an average day (V3)</b>
<b>Shopping</b>	56.71	0.1404	25,507	<b>3,580</b>
<b>Health service</b>	11.07	0.0274	25,507	<b>699</b>
<b>Work</b>	25.42	0.0629	25,507	<b>1,605</b>
<b>School</b>	9.8	0.0243	25,507	<b>619</b>
<b>Any reason</b>	87.35	0.2162	25,507	<b>5,515</b>

Using Census data, it is estimated that there were 20,410 permanent residents living in Hays in 2009 (see Appendix 5 for estimation of the number of permanent residents in Hays). The total number of people in Hays on an average day is thus the sum of the number of Hays residents (20,410), the number of people who travel to Hays for any reason (5,515), and the number of visitors who stay in local hotels and motels (1,359); that is, **there are a total of 27,284 people in Hays on an average day.**

#### **Estimation of Peak Population Levels during Five Sports Events**

The estimation of population levels during five sports events are accomplished using data collected from the face-to-face surveys at those five events and the mail survey of Hays residents. The estimation involves four steps: (1) estimating the ratios of non-Hays residents to Hays residents who attended those five sports events, (2) estimating the total number of Hays residents who attended each of those five events, (3) estimating the number of non-Hays residents who attended each of those five events, and (4) estimating the population levels in Hays on peak attendance days of five sports events.

### **Step 1: Estimating the Ratio of Non-Hays Residents to Hays Residents at Five Sports Events**

The face-to-face surveys asked attendees of those events if they are Hays residents or non-Hays residents and, if non-residents, whether they are staying in hotels/motels, staying at the homes of friends or family living in Hays, or in town only for the day. Table 2 shows the total number of people surveyed at each event and the percentages of Hays residents and non-Hays residents. Six hundred and seventy-four (674) people were surveyed at the State 2-1A Football Championship on November 28, 2009, and among those people surveyed, 16.47% were permanent residents of Hays, 0.45% were non-Hays residents staying in hotels/motels, 1.93% were staying with friends or family in Hays, and 81.16% were in town for the day. Among those 474 people who were surveyed at the Special Olympics, 18.6% were Hays residents, 54.55% were non-residents staying in hotels/motels, 4.23% were staying with friends/families in Hays, and 22.62% were in Hays for the day.

Using the percentages shown in Table 2, the ratios of non-Hays residents to Hays residents who attended each event are obtained. As shown in Table 3, mathematically, for every Hays resident who attended the State 2-1A Football Championship, 0.03 non-Hays residents stayed in hotels/motels, 0.12 non-Hays residents stayed with friends/family in Hays, and 4.93 non-Hays residents came to Hays for the day. For every Hays resident who attended the Special Olympics, 2.93 non-Hays residents stayed in hotels/motels, 0.23 non-Hays residents stayed with friends/family in Hays, and 1.22 non-Hays residents came to Hays for the day.

**Table 2: Percentages of Hays Residents and Non-Hays Residents Surveyed at Five Sports Events**

	State 2-1A Football Championship (n=674)	Hays City Shootout (n=502)	3-2-1A State Wrestling Tournament (n=204)	1A State Basketball Tournament (n=695)	Special Olympics Basketball & Cheerleading Tournament (n=474)
Hays residents	16.47%	44.22%	6.86%	12.09%	18.60%
Stay in hotels/motels	0.45%	4.98%	45.10%	12.37%	54.55%
Stay with friends/family in Hays	1.93%	3.59%	1.96%	1.58%	4.23%
In town for the day	81.16%	47.21%	46.08%	73.96%	22.62%

**Table 3: Ratios of Non-Hays Residents to Hays Residents Surveyed at Five Sports Events**

	State 2-1A Football Championship	Hays City Shootout	3-2-1A State Wrestling Tournament	1A State Basketball Tournament	Special Olympics Basketball & Cheerleading Tournament
Hays residents	1.00	1.00	1.00	1.00	1.00
Stay in motels/hotels	0.03	0.11	6.57	1.02	2.93
Stay with friends/family in Hays	0.12	0.08	0.29	0.13	0.23
In town for the day	4.93	1.07	6.72	6.12	1.22

***Step 2: Estimating the Total Number of Hays Residents Who Attended Five Sports Events***

A total of 718 households within the city limit of Hays completed the mail survey of Hays residents. The survey collected the number of people in each household who attended each one of the five sports events, the sum of which generates the total number of people who attended each event in those 718 Hays households (V4). As shown in Table 4, among those 718 households, a total of 95 people attended the State 2-1A Football Championship, 183 people attended the Hays City Shootout, 71 people attended the 3-2-1A State Wrestling Tournament, 98 people attended the 1A State Basketball Tournament, and 125 people attended the Special Olympics Basketball & Cheerleading Tournament. The number of Hays residents per household who attended each event (V5) can be calculated by Equation 4:

$$V5 = V4/718 \quad (4)$$

Mathematically, the numbers of Hays residents per household who attended those five events are thus 0.1323 (95/718), 0.2549 (183/718), 0.0989 (71/718), 0.1365 (98/718), and 0.1741 (125/718) respectively. The total number of Hays residents who attended each event (V6) can thus be estimated by multiplying the average number attending per household by the total households in Hays as in Equation 5:

$$V6 = V5 * \text{total number of households in Hays} \quad (5)$$

Using Census data, it is estimated that Hays had 8,393 households in 2009 (see Appendix 4 for estimation of the number of households in Hays). V6 can thus be estimated using Equation 5. For example, the total number of Hays residents who attended the State 2-1A Football Championship is estimated to be 1,110 ( $0.1323 * 8,393$ ). Similarly, it is estimated that 2,139 Hays residents attended the Hays City Shootout. A total of 830 Hays residents attended the 3-2-1A State Wrestling Tournament, 1,146 Hays residents attended the 1A State Basketball Tournament, and 1,461 Hays residents attended the Special Olympics (see Table 4).

**Table 4: Estimated Numbers of Hays Residents Who Attended Five Sports Events**

	Total number of people who attended the event in the households surveyed (V4)	Number of Hays residents per household who attended the event (V5)	Number of households in Hays in 2009	Total number of Hays residents who attended the event (V6)
<b>State 2-1A Football Championship</b>	95	0.1323	8,393	<b>1,110</b>
<b>Hays City Shootout</b>	183	0.2549	8,393	<b>2,139</b>
<b>3-2-1A State Wrestling Tournament</b>	71	0.0989	8,393	<b>830</b>
<b>1A State Basketball Tournament</b>	98	0.1365	8,393	<b>1,146</b>
<b>Special Olympics Basketball/Cheerleading Tournament</b>	125	0.1741	8,393	<b>1,461</b>

### ***Step3: Estimating the Number of Non-Hays Residents Who Attended Five Sports Events***

With the total number of Hays residents who attended each event (Table 4) and the ratios of non-Hays residents to Hays residents who attended each event (Table 3), the numbers of non-Hays residents who attended each event can be estimated by Equations 6, 7 and 8:



Number of non-Hays residents who stayed in hotels/motels =  $V6 \times \text{ratio of non-Hays residents who stayed in hotels/motels to Hays residents}$  (6)

Number of non-Hays residents who stayed with friends/families in Hays =  $V6 \times \text{ratio of non-Hays residents who stayed with friends/families to Hays residents}$  (7)

Number of non-Hays residents who came to Hays for the day =  $V6 \times \text{ratio of non-Hays residents who came to Hays for the day to Hays residents}$  (8)

Table 5 shows the estimated numbers of Hays and non-Hays residents who attended those five events. A total of 6,742 people attended the State 2-1A Football Championship, including 1,110 Hays residents, 30 people who stayed in motels/hotels, 130 people who stayed with friends/family in Hays, and 5,472 people who came to Hays for the day. A total of 4,838 people attended the Hays Shootout; 12,097 people attended the 3-2-1A State Wrestling Tournament; 9,476 attended 1A State Basketball Tournament; and 7,855 attended the Special Olympics.

**Table 5: Estimated Numbers of Hays and non-Hays Residents Who Attended Five Sports Events**

	State 2-1A Football Championship	Hays City Shootout	3-2-1A State Wrestling Tournament	1A State Basketball Tournament	Special Olympics Basketball & Cheerleading Tournament
Hays residents	1,110	2,139	830	1,146	1,461
Stay in motels/hotels	30	241	5,456	1,172	4,285
Stay with friends/family in Hays	130	174	237	150	332
In town for the day	5,472	2,284	5,574	7,008	1,777
Total	6,742	4,838	12,097	9,476	7,855

#### ***Step 4: Estimating the Population Levels in Hays on Peak Attendance Days of Five Sports Events***

The number of people in Hays on the peak attendance day of a sports event can be estimated by Equation 9:

$$\begin{aligned} \text{Number of people in Hays on the peak day of an event} = & \text{number of permanent Hays residents} + \text{number of non-Hays residents who} \\ & \text{attended the event} + \text{number of people who travel to Hays for any reason on} \\ & \text{an average day} + \text{number of visitors who stay in Hays hotels/motels on an} \\ & \text{average day} \end{aligned} \quad (9)$$

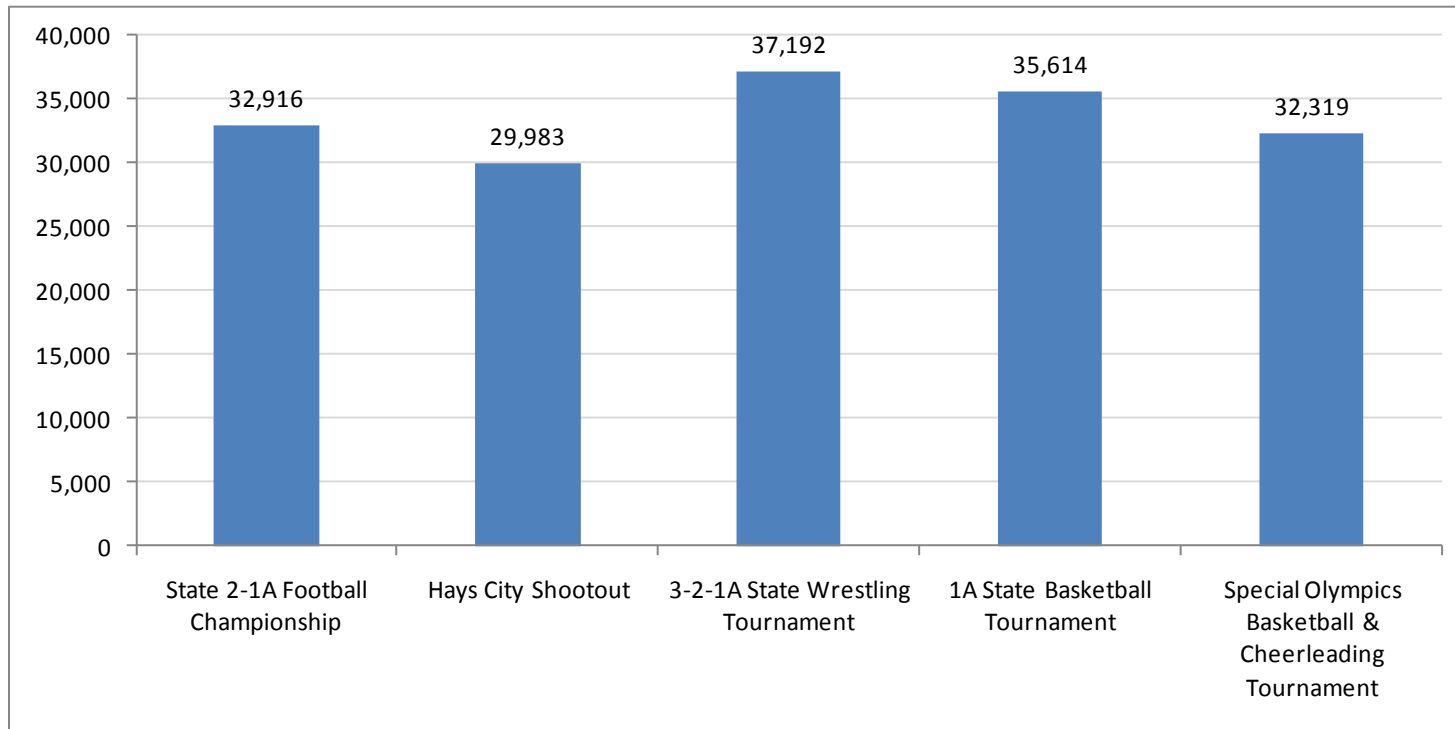
Table 6 contains the statistics needed for calculating the numbers of people in Hays on peak attendance days of five sports events. The estimation of the numbers of people who stayed in motels/hotels during those five events shows that the hotels and motels in Hays were fully occupied by the attendees of the 3-2-1A State Wrestling Tournament and the Special Olympics during those two events (see Table 5). Therefore, the number of visitors who stay in Hays hotels/motels on an average day is left out of Equation 9 when the numbers of people in Hays during peak attendance days of the 3-2-1A State Wrestling Tournament and the Special Olympics were estimated. There were 32,916 people in Hays on the day when the State 2-1A Football Championship was hosted. The other four events all lasted for multiple days. The total numbers of people in Hays on peak attendance days of those four events were 29,983, 37,192, 35,614, and 32,319 respectively (Table 6 & Figure 1).

**Table 6: Number of People in Hays on Peak Days of Five Sports Events**

	Number of permanent residents in Hays	Number of non-Hays residents who attended the event	Number of people who travel to Hays for any reason on an average day	Number of visitors who stay in hotels/motels on an average day	Peak daily number of people in Hays during the event
<b>State 2-1A Football Championship</b>	20,410	5,632	5,515	1,359	<b>32,916</b>
<b>Hays City Shootout</b>	20,410	2,699	5,515	1,359	<b>29,983</b>
<b>3-2-1A State Wrestling Tournament</b>	20,410	11,267	5,515	1,359	<b>37,192*</b>
<b>1A State Basketball Tournament</b>	20,410	8,330	5,515	1,359	<b>35,614</b>
<b>Special Olympics Basketball &amp; Cheerleading Tournament</b>	20,410	6,394	5,515	1,359	<b>32,319*</b>

\* The number of visitors who stay in Hays hotels/motels on an average day is left out of Equation 9 when this number is calculated, because it is estimated that the hotels and motels in Hays were fully occupied by the attendees of the event.

**Figure 1: Number of People in Hays on Peak Days of Five Sports Events**



## Appendix 1: Regional Telephone Survey Instrument

### Hays Population Count Nine County Telephone Survey

#### INTRODUCTION

In order to better serve its visitors and be prepared to handle any major emergencies, the City of Hays has asked the Docking Institute to conduct a study to estimate just how many people travel to Hays each day for various reasons. Participation in our study is voluntary, but your identity will remain anonymous and your responses will be kept strictly confidential. We'd like to ask you a few brief questions about how members of your household travel to Hays.

#### SCREENING

1. This survey is intended only for persons living outside Hays city limits. Can you confirm that you do NOT live within the City of Hays?

Do NOT live in Hays

Do live in Hays. ["Thank you, but we only want to interview those living outside Hays." Terminate Interview]

- 1a. In what county do you live? [choose from list, if not on list, thank you, bye]

Barton

Ellis

Graham

Ness

Osborne

Rooks

Rush

Russell

Trego

#### ADULT SECTION

2. First, we are going to ask you some questions about your travel to Hays. Do you travel to Hays at least once per year?

Yes [Skip to Q3]

No

- 2a. Is there another adult in the household who travels to Hays at least once per year?

Yes [Skip to Q11]

No [Skip to Q35]

Adult 1

3. On average, how often do you travel to Hays for any reason? \_\_\_\_\_ times

- 3a. 1 Per Week
- 2 Per Month
- 3 Per year

4. On average, how often do you travel to Hays for shopping or a trip to purchase goods or services from businesses within Hays? \_\_\_\_\_ times

- 4a. 1 Per week
- 2 Per month
- 3 Per year

5. On average, how often do you travel to Hays to see a doctor, dentist, hospital or other health service provider? \_\_\_\_\_ times

- 5a. 1 Per week
- 2 Per month
- 3 Per year

6. Do you work in Hays or travel there as part of your job?

- a. Yes
- b. No [Skip to Q8]

7. On average, how often do you travel to Hays for work?

- a. \_\_\_\_\_ times

- 7a. 1 Per week
- 2 Per month
- 3 Per year

8. Do you attend school in Hays?

- a. Yes
- b. No [Skip to Q10]

9. On average, how many days per week do you attend school in Hays?

- a. \_\_\_\_\_ days

10. Is there another adult in your household who travels to Hays at least once a year?

Yes

No (Skip to Q35)

Adult 2

11. Please try to estimate as best you can, on average, how often this person travels to Hays for any reason? \_\_\_\_\_ times

- 11a. 1 Per Week

2 Per Month  
3 Per year

12. On average, how often does this person travel to Hays for shopping or a trip to purchase goods and services from businesses within Hays? \_\_\_\_\_ times

12a. 1 Per week  
2 Per month  
3 Per year

13. On average, how often does this person travel to Hays on a trip to see a doctor, dentist, hospital or other health service provider? \_\_\_\_\_ times

13a. 1 Per week  
2 Per month  
3 Per year

14. Does this person work in Hays or travel there as part of their job?

- a. Yes
- b. No [Skip to Q16]

15. On average, how often does this person travel to Hays for work?

a. \_\_\_\_\_ times

15a. 1 Per week  
2 Per month  
3 Per year

16. Does this person attend school in Hays?

- a. Yes
- b. No [Skip to Q18]

17. On average, how many days per week does this person attend school in Hays?

a. \_\_\_\_\_ days

18. Is there another adult in the household who travels to Hays at least once a year?

Yes

No (Skip to Q35)

Adult 3

19. On average, how often does this person travel to Hays for any reason? \_\_\_\_\_ times

19a. 1 Per Week  
2 Per Month  
3 Per Year

20. On average, how often does this person travel to Hays for shopping trip or a trip to purchase goods and services from businesses within Hays? \_\_\_\_\_ times

- 20a. 1 Per week
- 2 Per month
- 3 Per year

21. On average, how often does this person travel to Hays on a trip to see a doctor, dentist, hospital or other health service provider? \_\_\_\_\_ times

- 21a. 1 Per week
- 2 Per month
- 3 Per year

22. Does this person work in Hays or travel there as part of their job?

- a. Yes
- b. No [Skip to Q24]

23. On average, how often does this person travel to Hays for work?

- a. \_\_\_\_\_ times

- 23a. 1 Per week
- 2 Per month
- 3 Per year

24. Does this person attend school in Hays?

- a. Yes
- b. No [Skip to Q26]

25. On average, how many days per week does this person attend school in Hays?

- a. \_\_\_\_\_ days

26. Is there another adult in the household who travels to Hays at least once a year?

Yes

No (Skip to Q35)

Adult 4

27. On average, how often does this person go to Hays for any reason? \_\_\_\_\_ times

- 27a. 1 Per Week
- 2 Per Month
- 3 Per year

28. On average, how often does this person travel to Hays for shopping or a trip to purchase goods and services from businesses within Hays? \_\_\_\_\_ times

- 28a. 1 Per week



2 Per month  
3 Per year

29. On average, how often does this person travel to Hays on a trip to see a doctor, dentist, hospital or other health service provider? \_\_\_\_\_ times

29a. 1 Per week  
2 Per month  
3 Per year

30. Does this person work in Hays or travel there as part of their job?

- a. Yes
- b. No [Skip to Q32]

31. On average, how often does this person travel to Hays for work?

a. \_\_\_\_\_ times

31a. 1 Per week  
2 Per month  
3 Per year

32. Does this person attend school in Hays?

- a. Yes
- b. No [Skip to Q34]

33. On average, how many days per week does this person attend school in Hays?

a. \_\_\_\_\_ days

34. Is there another adult in the household who travels to Hays at least once a year?

Yes  
No

#### *CHILDREN SECTION*

35. How many children live in your household who travel to Hays at least once a year?

\_\_\_\_\_ children

[IF Q35 = 0, Skip to Q84]

#### *CHILD 1*

36. We are now going to ask you about your oldest child who travels to Hays at least once a year. Is that child 15 years old or older?

Yes  
No

37. On average, how often does this child go to Hays for any reason? \_\_\_\_\_ times

- 37a. 1 Per Week  
2 Per Month  
3 Per year

38. On average how often does this child travel to Hays for shopping trips or to purchase goods and services from businesses within Hays?

\_\_\_\_\_ times

- 38a. 1 Per week  
2 Per month  
3 Per year

39. On average, how often does this child travel to Hays on a trip to see a doctor, dentist, hospital or other health service provider? \_\_\_\_\_ times

- 39a. 1 Per week  
2 Per month  
3 Per year

[IF Q36 = No, Skip to Q42]

40. Does this child work in Hays?

Yes

No [Skip to Q42]

41. On average, how many days per week does this child travel to Hays for work?

\_\_\_\_\_ times

42. Does this child attend school in Hays?

Yes

No [Skip to Q44]

43. On average, how many days per week does this child attend school in Hays?

\_\_\_\_\_ times

## CHILD 2

[If Q35 < 2, Skip to Q84]

44. Is this second child in your household who travels to Hays at least once a year 15 years old or older?

Yes

No

45. On average, how often does this child go to Hays for any reason? \_\_\_\_\_ times

- 45a. 1 Per Week  
2 Per Month  
3 Per year

46. On average how often does this child travel to Hays for shopping trips or to purchase goods and services from businesses within Hays?

\_\_\_\_\_ times

- 46a. 1 Per week  
2 Per month  
3 Per year

47. On average, how often does this child travel to Hays on a trip to see a doctor, dentist, hospital or other health service provider? \_\_\_\_\_ times

- 47a. 1 Per week  
2 Per month  
3 Per year

[If Q44 = No, Skip to Q50]

48. Does this child work in Hays?

Yes

No [Skip to Q50]

49. On average, how many days per week does this child travel to Hays for work?

\_\_\_\_\_ days

50. Does this child attend school in Hays?

Yes

No [Skip to Q52]

51. On average, how many days per week does this child attend school in Hays?

\_\_\_\_\_ days

### CHILD 3

[If Q35 < 3, Skip to Q84]

52. Is the third child in this household who travels to Hays at least once a year 15 years old or older?

Yes

No

53. On average, how often does this child go to Hays for any reason? \_\_\_\_\_ times

- 53a. 1 Per Week  
2 Per Month  
3 Per year

54. On average how often does this child travel to Hays for shopping trips or to purchase goods and services from businesses within Hays?

\_\_\_\_\_ times

- 54a. 1 Per week  
2 Per month  
3 Per year

55. On average, how often does this child travel to Hays on a trip to see a doctor, dentist, hospital or other health service provider? \_\_\_\_\_ times

- 55a. 1 Per week  
2 Per month  
3 Per year

[IF Q52 = No, Skip to Q58]

56. Does this child work in Hays?

Yes

No [Skip to Q58]

57. On average, how many days per week does this child travel to Hays for work?  
\_\_\_\_\_ days

58. Does this child attend school in Hays?

Yes

No [Skip to Q60]

59. On average, how many days per week does this child attend school in Hays?  
\_\_\_\_\_ days

#### *CHILD 4*

[If Q35 < 4, Skip to Q84]

60. Is the fourth child in your household who travels to Hays at least once a year 15 years old or older?

Yes

No

61. On average, how often does this child go to Hays for any reason? \_\_\_\_\_ times

- 61a. 1 Per Week  
2 Per Month  
3 Per year

62. On average how often does this child travel to Hays for shopping trips or to purchase goods and services from businesses within Hays?  
\_\_\_\_\_ times

- 62a. 1 Per week  
2 Per month  
3 Per year

63. On average, how often does this child travel to Hays on a trip to see a doctor, dentist, hospital or other health service provider? \_\_\_\_\_ times

- 63a. 1 Per week  
2 Per month  
3 Per year

[IF Q60 = No, Skip to Q66]

64. Does this child work in Hays?

Yes

No [Skip to Q66]

65. On average, how many days per week does this child travel to Hays for work?  
\_\_\_\_\_ days

66. Does this child attend school in Hays?

Yes

No [Skip to Q68]

67. On average, how many days per week does this child attend school in Hays?  
\_\_\_\_\_ days

## CHILD 5

[If Q35 < 5, Skip to Q84]

68. Is the fifth child in your household who travels to Hays at least once a year 15 years old or older?

Yes

No

69. On average, how often does this child go to Hays for any reason? \_\_\_\_\_ times

- 69a. 1 Per Week  
2 Per Month  
3 Per year

70. On average how often does this child travel to Hays for shopping trips or to purchase goods and services from businesses within Hays?  
\_\_\_\_\_ times

- 70a. 1 Per week  
2 Per month  
3 Per year

71. On average, how often does this child travel to Hays on a trip to see a doctor, dentist, hospital or other health service provider? \_\_\_\_\_ times

- 71a. 1 Per week

2 Per month  
3 Per year

[IF Q68 = No, Skip to Q74]

72. Does this child work in Hays?

Yes

No [Skip to Q74]

73. On average, how many days per week does this child travel to Hays for work?  
\_\_\_\_\_ days

74. Does this child attend school in Hays?

Yes

No [Skip to Q76]

75. On average, how many days per week does this child attend school in Hays?  
\_\_\_\_\_ days

#### CHILD 6

[If Q35 < 6, Skip to Q84]

76. Is the sixth child in your household who travels to Hays at least once a year 15 years old or older?

Yes

No

77. On average, how often does this child go to Hays for any reason? \_\_\_\_\_ times

77a. 1 Per Week  
2 Per Month  
3 Per year

78. On average how often does this child travel to Hays for shopping trips or to purchase goods and services from businesses within Hays?  
\_\_\_\_\_ times

78a. 1 Per week  
2 Per month  
3 Per year

79. On average, how often does this child travel to Hays on a trip to see a doctor, dentist, hospital or other health service provider? \_\_\_\_\_ times

79a. 1 Per week  
2 Per month  
3 Per year

[IF Q76 = No, Skip to Q82]

80. Does this child work in Hays?

Yes

No [Skip to Q82]

81. On average, how many days per week does this child travel to Hays for work?

\_\_\_\_\_ days

82. Does this child attend school in Hays?

Yes

No [Skip to Q84]

83. On average, how many days per week does this child attend school in Hays?

\_\_\_\_\_ days

84. That's our last question, thank you very much for participating in our study.

## Appendix 2: Face-to-Face Survey Instrument

Event: \_\_\_\_\_

Location: \_\_\_\_\_

Date: \_\_\_\_\_ Time Start: \_\_\_\_\_ Time End: \_\_\_\_\_

Hi, my name is \_\_\_\_ with the Docking Institute. We are doing a research project for the City of Hays. Can you answer one or two questions?

Q1. Are you a Hays resident? If Yes, thank you, that's all I need. If No, go to Q2.

Q2. Are you staying in a hotel, with a friend or family member, or did you just drive in for the day?

Hays Residents	Motel/Hotel	With Friends/Family	For the Day	Other



## Appendix 3: Mail Survey Instrument

### City of Hays Sports Event Attendance Survey

Q1. Do you live within or outside the city limit of Hays?

☐ I live **within** the city limit of Hays.

☐ I live **outside** of the city limit of Hays.

Please check Yes if any member(s) of your household attended each event as spectators, players, cheerleaders, or game organizers, and if so, indicate how many member(s) attended each.

Q2. Did you or other household member(s) attend the State 2-1A High School Football Championship Game at Lewis Field Stadium on November 28, 2009?

☐ Yes —————→

☐ No, please go to Q3

Q2a. Including you, how many member(s) in your household attended the State 2-1A Football Championship Game?

\_\_\_\_\_

Q3. Did you or other household member(s) attend any game(s) of the Hays City Shootout at Hays High and Felton Middle School Gymnasiums during December 3 to 5, 2009?

☐ Yes —————→

☐ No, please go to Q4

Q3a. Including you, how many member(s) in your household attended any game(s) of the Hays City Shootout?

\_\_\_\_\_

Q4. Did you or other household member(s) attend the 3-2-1A State High School Wrestling Tournament at Gross Memorial Coliseum on either February 26 or 27, 2010?

☐ Yes —————→

☐ No, please go to Q5

Q4a. Including you, how many member(s) in your household attended the 3-2-1A State Wrestling Tournament?

\_\_\_\_\_

Q5. Did you or other household member(s) attend any game(s) of the 1A State Boys and Girls High School Basketball Tournament at Gross Memorial Coliseum during March 9 to 12, 2010?

- ☐ Yes —————→
- ☐ No, please go to Q6

Q5a. Including you, how many member(s) in your household attended the 3-2-1A State High School Basketball Tournament?

\_\_\_\_\_

Q6. Did you or other household member(s) attend any game(s) of the Special Olympics Basketball Tournament at Gross Memorial Coliseum during March 18 to 20, 2010?

- ☐ Yes —————→
- ☐ No

Q6a. Including you, how many member(s) in your household attended the Special Olympics Basketball Tournament?

\_\_\_\_\_

\_\_\_\_\_

**The City of Hays thanks you for completing this survey.  
Please put this questionnaire in the pre-addressed envelope and drop it in a mail box.  
The postage has been paid.**

## Appendix 4: Estimation of the Total Number of Households in the Nine-County Region

Census has 2000 population and household information for counties and cities. It also conducts population estimates for years between decennial censuses. Assuming the average number of people per household did not change from 2000 to 2009, the number of households in year 2009 for a county or city can be estimated using the following equation:

$$\text{Number of households} = (\text{number of households in 2000} / \text{population in 2000}) * \text{population estimates in 2009}$$

As Table 4.1 shows, it is estimated that Hays had 8,393 households in 2009. Ellis County had 11,287 households in 2009. Therefore, there were 2,894 households in Ellis County excluding the City of Hays. In the nine-county regions excluding Hays, there were a total of 25,507 households in 2009.

**Table 4.1: Estimation of Household Numbers in Hays and Nine Counties**

	Population 2000	Household 2000	Population estimate 2009	Estimated number of households in year 2009
City of Hays	20,013	8,230	20,410*	8,393
Barton County	28,205	11,393	27,464	11,094
Ellis County	27,507	11,193	27,739	11,287
Graham County	2,946	1,263	2,435	1,044
Ness County	3,454	1,516	2,835	1,244
Osborne County	4,452	1,940	3,849	1,677
Rooks County	5,685	2,362	4,984	2,071
Rush County	3,551	1,548	3,143	1,370
Russell County	7,370	3,207	6,596	2,870
Trego County	3,319	1,412	2,920	1,242

Source: [www.census.gov](http://www.census.gov)

\* Census has 2009 population estimates for counties. The most recent population information for Hays is 2008 estimate. This number is estimated using Census estimates from 2000 to 2008. The estimation of Hays population in 2009 is shown in Appendix 5.

## Appendix 5: Estimation of the Number of Permanent Residents in Hays

Census has population estimates for the City of Hays from 2000 to 2008, from which annual percentage changes can be calculated for those eight years (see Table 5.1). For example, from 2000 to 2001, the population in Hays increased by 41 (20078-20037), or 0.20% (41/20037). The sum of those annual percentage changes in eight years divided by 8 generates the average annual percentage change, which is 0.207%. Assuming the population in Hays increased by 0.21% from 2008 to 2009, the 2009 population in Hays would be 20410 ( $20368 \times 1.0021$ ).

**Table 5.1 Annual Percentage Population Change**

	Population estimate	Annual percentage change
July 1, 2008	20368	1.45%
July 1, 2007	20076	0.30%
July 1, 2006	20015	0.67%
July 1, 2005	19882	-0.33%
July 1, 2004	19948	-0.18%
July 1, 2003	19984	-0.13%
July 1, 2002	20010	-0.34%
July 1, 2001	20078	0.20%
July 1, 2000	20037	/

Source: [www.census.gov](http://www.census.gov)