2012 State Damage Prevention Program Grants Final Report
CFDA Number: 20.720

Award Number:	DTPH56-12-G-PHPS10
Project Title:	Michigan Public Service Commission State Damage Prevention
Date Submitted:	September 27, 2013
Submitted by:	David Chislea, Principal Investigator

Specific Objective(s) of the Agreement

- Foster support and partnership with stakeholders
- Support a Damage Prevention Education Program for industry stakeholders
- Support Public Awareness and Stakeholder Education; and
- Review the Effectiveness of Damage Prevention Programs.

Workscope

- *Element (2):* A process for fostering and ensuring the support and partnership of stakeholders, including excavators, operators, locators, designers, and local government in all phases of the program.

- *Element (4):* Participation by operators, excavators, and other stakeholders in the development and implementation of effective employee training programs to ensure that operators, the one call center, the enforcing agency, and the excavators have partnered to design and implement training for the employees of operators, excavators, and locators.

- *Element (5):* A process for fostering and ensuring active participation by all stakeholders in public education for damage prevention activities.

- *Element (9):* A process for review and analysis of the effectiveness of each program element, including a means for implementing improvements identified by such program review.

Accomplishments for the grant period (Item 1 under Agreement Article IX, Section 9.02 Final Report: "A comparison of actual accomplishments to the objectives established for the period.")

Project Abstract/Statement of Objectives

The grant funded the continuation of one statewide Damage Prevention Coordinator. The duties of the DPC included: 1) facilitating the implementation of a statewide damage prevention organizational structure (MISS DIG Educational Committee); 2) continuing the development of Damage Prevention Associations (DPA) in the state of Michigan; 3) providing support for the continuation of safe digging practices for every DPA in the state of Michigan; 4) coordinating damage prevention seminars; 5) developing a DVD for safe excavating practices; 6) fostering

increased municipal, university and gathering line operator membership in MISS DIG in an effort to encourage municipalities, universities and gathering line operators to actively participate in order to reduce underground damages.

The MPSC entered into a contractual/grant agreement with MISS DIG System, Inc. who accepted the role and performed the duties of the statewide Damage Prevention Coordinator. The work completed by MISS DIG System, Inc. is set forth under each Element below.

Element 2 – Comprehensive Stakeholder Support

"A process for fostering and ensuring the support and partnership of stakeholders, including excavators, operators, locators, designers, and local government in all phases of the program."

Objective:

The statewide DPC will enhance the element by bringing expertise and continuity to the state damage prevention program. This grant will continue the implementation of this element by improving and increasing the damage prevention efforts in the state of Michigan. The DPC has been instrumental in facilitating and enhancing the support of all stakeholders. The successes achieved in 2011 will continue to be realized in 2012 as outreach efforts to all areas continue. The DPC's duties will allow for the support for all existing and new DPAs. Fostering increased municipal membership by extending that outreach to universities and gathering line operators will improve damage prevention communication with a goal of reducing damages to facilities and preventing injury.

The objectives were completed as follows:

1. The DPC worked with the DPA's beginning in late August 2012 to implement a statewide damage prevention organizational structure, expanding the DPA's, and coordinating workshops and toolbox talks. The DPC also reached out to municipalities and universities not on the MISS DIG System to educate them on the benefits of participating.

2. In conjunction with the DPA's, the DPC presented at 29 workshops / toolbox talks throughout the state to an audience of approximately 3,218. The DPC participated in 15 trade expos to educate the farming community and do-it-yourselfers.

3. The goal was to conduct between 10 and 15 seminars / workshops; however, by bringing meetings to work sites and offices, the DPC was able to host 29 workshops/toolbox talks.

Element 4 – Effective Employee Training

"Participation by operators, excavators, and other stakeholders in the development and implementation of effective employee training programs to ensure that operators, the one call center, the enforcing agency, and the excavators have partnered to design and implement training for the employees of operators, excavators, and locators."

Objective:

The funding will help in the development of a DVD to clearly show the proper method for learning the exact location of underground facilities prior to using power equipment. In addition, this funding will provide support for the Excavator's Seminars and other DPA efforts at educating stakeholders. This support will include the funding for specialized speakers and possible new videos with the safe digging message. This will also include hosting of the Excavator's Seminar

to enable continued education of safe digging practices in existing and additional areas of the state of Michigan.

The objectives were completed as follows:

1. The DPC, through Angel Vision, developed a short video/DVD public service announcement entitled "Hand Exposing" showcasing hand digging practices. The video can be seen on YouTube at http://www.youtube.com/watch?v=t783TsizRfo or by searching "MISS DIG Hand Exposing" on the YouTube website.

2. See Element 2 for details on stakeholder educational efforts.

Element 5 – Public Education
"A process for fostering and ensuring active participation by all stakeholders in public education for damage prevention activities."

Objectives:
Through the grant, a successful billboard campaign will be expanded to include areas that have not yet been targeted. Currently, the billboard and ad campaign funding is provided by the three large pipeline operators in the state. The additional revenue will allow for this ad campaign to be expanded to other areas of the state with small pipeline operators.

The objectives were completed as follows:

1. From February 25 to April 14, 2013, thirteen (13) billboards were displayed around the state for one month each. The goal was to facilitate the rental of approximately five (5) billboards; however, due to wise the expenditure of available funds the DPC was able to more than double the number of billboard rentals.

2. Billboards were placed in the following areas across the state of Michigan: Manistee, Traverse City, Escanaba, Alpena, Mancelona, Gaylord, and Gladstone

Element 9 – Damage Prevention Program Review
"A process for review and analysis of the effectiveness of each program element, including a means for implementing improvements identified by such program review."

Objectives:
Additional funding was requested to target other geographical locations and also to drill down to a more detailed level. Additional funding was also requested for implementation measures for specific public awareness issues.

The objectives were completed as follows:

1. A review of the Damage Prevention Program was conducted as part of this grant. MISS DIG damage prevention efforts, made possible in part by this and previous years' grants resulted in 93% of excavators having an awareness of MISS DIG / 811. MISS DIG contracted with A&K Research in early March to conduct the MISS DIG Communications Evaluation Survey. The project contained approximately 18 questions. The grant covered a portion of this expense; MISS DIG paid the difference. The Communications Survey results are attached.

2. In addition to the Communications Evaluation Survey, MISS DIG surveyed new callers by asking how they heard about MISS DIG. Overall survey results indicated that 2.99% of new callers contacted MISS DIG after seeing a billboard. If contractors and callers who knew to contact MISS DIG are removed, the resulting billboard percentage is 9.19%. In areas where billboards paid for by the grant were located, the percentage of callers who contacted MISS DIG after seeing a billboard was as high as 4.81%. The MISS DIG new caller survey results are attached.

3. In an effort to determine how external factors impact MISS DIG ticket volume, internal metrics were calculated and included comparisons of construction employment, building permits, and MISS DIG presentations to ticket volume. The standardized value and percentage of change calculations indicate that in recent years, increases in ticket volume exceed construction employment, and new private housing building permits. Construction employment and new private housing building permits both have a very high correlation to ticket volume. The increase in ticket volume over construction employment and new private housing building permits can be attributed to MISS DIG's public education efforts. The MISS DIG internal ticket volume metrics are attached.

Quantifiable Metrics/Measures of Effectiveness (Item 2 under Article IX, Section 9.01 Project Report: "Where the output of the project can be quantified, a computation of the cost per unit of output.")

Through workshops and toolbox talks the DPC has reached approximately 3,218 operators, excavators, and other stakeholders.

MISS DIG estimates that the damage prevention efforts made possible in part by this and the previous years' grants resulted in 93% of excavators having an awareness of MISS DIG / 811.

The attached Communications Survey results that include the MISS DIG new caller survey results and the MISS DIG Internal Ticket Volume metrics provide quantifiable metrics and measures of effectiveness.

Issues, Problems or Challenges (Item 3 under Article IX, Section 9.01 Project Report: "The reasons for slippage if established objectives were not met.")

There are no issues, problems or challenge to report.

Final Financial Status Report

The entire grant award was expended during the term of the grant.

The following documents supporting the grant expenditures are attached:

- SF 425
- MPSC Cost Breakdown
- MISS DIG Final Financial Status Report/Payment Request

Requests of the GOTR and/or PHMSA

No actions requested at this time.

Communications Survey Results

2013 Communications Survey: Excavators

Report Of Findings Prepared For

Prepared By

A&K RESEARCH

A & K Research

July 2013

Summary & Implications

Executive Summary

- Eight-in-ten (84%) of the excavators who responded to this survey indicated that they have seen or heard information relating to natural gas pipeline safety in the last 12 months. Primary excavators (excavation is a primary role of the business) were significantly more aware (87%) than Secondary excavators (67%).
  - Among those aware, the most commonly reported sources of this information included U.S. mail (60%), handouts / inserts / flyers (35%), newspaper / television / radio (35%), information posted near pipelines (26%), sign / billboard (23%), Internet (20%), MISS DIG event or DPA meeting (14%), face-to-face meetings (13%), and e-mail (13%).
  - Content of the information seen / heard included "Calling 811 or MISS DIG before you dig" (92%), presence of a natural gas pipeline in the community (46%), potential natural gas pipeline hazards (46%), how to respond to a natural gas pipeline leak (41%), recognizing and detecting a natural gas pipeline leak (33%), and location of a natural gas pipeline in the community (29%).
- All excavators in the Upper Peninsula (100%) were aware of pipeline safety information, while the lowest awareness was seen in the North Lower region, but still at 77%. Upper Peninsula excavators were less likely to see or hear the information on the Internet (6%) compared to the other regions (20% to 24%), while those in the southern regions were less likely to mention MISS DIG events as a source of awareness (11% and 14% compared to 37% in Upper Peninsula).
- Awareness of 811 / MISS DIG was very high (93%) with no difference between Primary or Secondary excavators. Awareness was highest in the Upper Peninsula (100%) – 93% to 94% in other regions.
  - Among those aware of MISS DIG, the most commonly reported sources of MISS DIG information included U.S. mail (55%), handouts / inserts / flyers (39%), television (34%), billboards (33%), radio (30%), Internet (21%), face-to-face meetings (18%), information posted near pipelines (18%), booth at home improvement show (7%), social media (3%) and NASCAR events (2%).
  - Primary excavators were more likely to see billboards and information near pipelines compared to Secondary excavators.
  - Excavators in the Upper Peninsula were less likely to see MISS DIG information on the Internet (13% vs. 18% to 31%) while those in the North Lower were more likely to see information at home shows compared to the Southern regions (4% - 5%).

Executive Summary (Cont.)

- Most (79%) of the excavators surveyed understand that a call to MISS DIG is required before digging, although there were some who assumed that such a call is *recommended* (20%) rather than *required.*

- Information regarding who to contact before digging was primarily discussed in meetings (42%) followed by inclusion in project plans (28%) – both significantly higher among Primary Excavators. Almost one-third (32%) indicated that the information was not communicated as the responsibility was handled by a single individual.

- The median number of times contacting MISS DIG in the past 12 months was 6 among Primary excavators (only once among Secondary excavators). Usually contact was by phone (90%).

- Almost two-thirds (63%) were aware that staking requests could be initiated through the MISS DIG website, with 32% actually doing so. Half (52%) of Secondary excavators were not aware of this capability.
  - Most (74%) requests were made through RTE, with 59% using E-Locate.
  - Approximately one-third (34%) would be interested in ticket entry via the web, including 38% of those not aware of the capability. However, 82% of Secondary excavators indicated they would not be interested. Those in the Upper Peninsula were more interested (43%) than North Lower (22%).

- Almost one-third (31%) reported that their organization has *never* unexpectedly encountered a natural gas pipeline while digging. However, 37% have unexpectedly encountered a natural gas pipeline while digging within the past two years, and approximately one-fifth (18%) have had this experience more than 2 years ago.
  - Excavators in the Upper Peninsula (0%) were much less likely to have encountered an unexpected pipeline in the past 6 months compared to the other regions (ranging from 14% to 18%).

- Almost four-in-ten (39%) were aware of Positive Response. A small percentage (1%) reported that they have used the Damage Information Reporting Tool (DIRT) at some time in the past.

- However, if the need to use this tool were to arise, it was common for excavators to understand the signs that a natural gas pipeline is leaking, such as odor of rotten eggs (92%), a hissing sound (80%), bubbles in a pool of standing water (66%), dirt blowing (56%), and/or dead vegetation (40%). Excavators in the Southeast region (4%) were less likely to mention 'ice or frozen soil' than the other regions (20% to 25%).

- Most (90%) agreed with the statement that "Michigan's MISS DIG program does a good job of informing people in your industry about natural gas pipeline safety."

Research Implications

- ✓ The finding that a high proportion of excavators indicated that they have seen or heard information about natural gas pipeline safety in the past 12 months suggests that efforts by MISS DIG and natural gas utilities / pipeline operators to educate excavators has been getting noticed. It is also encouraging to find that the information recalled included MISS DIG – which topped the list by far, as well as natural gas pipeline hazards, and the presence of natural gas pipelines in the community.

- ✓ Awareness was total in the Upper Peninsula, suggesting that efforts directed to the part of the state have been very successful. Additional work in the Northern Lower Peninsula would be prudent as three-quarter of the excavators in that area recalled information.

- ✓ Awareness of MISS DIG specifically was almost complete – again highest in the Upper Peninsula, but still over 90% in the other regions. However, while there is widespread understanding among excavators that a call to MISS DIG is required before digging, there is still some room for educating excavators that such a call is in fact *required* and not just *recommended* (one-fifth harboring this understanding).

- ✓ The proportion of those who would like to initiate staking requests through the **www.missdig.org** website (34%) is similar to the proportion of excavators who have used the tool (32%). Additional efforts may be needed to educated excavators of the benefits of utilizing the website for requests as 31% were aware but have never used the process. Importantly, 38% of those unaware of the capability indicated they would like to use RTE or E-Locate – thus awareness building is also recommended.

- ✓ The finding that the vast majority of the survey respondents felt that the MISS DIG program is doing a good job of informing excavators about natural gas pipeline safety is another measure of the success of educational efforts to this point.

Detailed Findings

Methodology (Cont.)

- In order to facilitate geographic analysis, a stratified sample process was used to ensure sufficient number of completions per each of four (4) geographic regions in Michigan – defined by a combination of the 7 DMAs (Dominant Marketing Area). Between 490 and 760 companies were randomly selected within each DMA in order to target a minimum of 50 completions per DMA. The data was then weighted back to the original regional representation among all companies in the list so that the geographic impact would be accurately represented in the final data set.

- The table below illustrates the proportion of companies per Region in the 'universe,' i.e. the list provided by MISS DIG ('State' in table below) and the percentage of surveys returned and included in the analysis. The DMAs associated within each region are also shown. The data in the report is weighted to be representative of the 'State' percentages.

Region	DMAs	Percentages	
		State	Survey
Southeast	(Detroit / Flint / Saginaw / Bay City)	59%	21%
Southwest	(Grand Rapids / Lansing)	26%	29%
North Lower	(Traverse City / Alpena)	12%	29%
Upper	(Marquette)	3%	21%
		100%	100%

- The stratified sampling process ensures the final analysis is based upon enough surveys to be statistically valid for those DMA's with small representation in the state – and thus allows conclusions to be drawn regarding the smaller DMAs. The analysis for the total sample is based upon the proper representation of companies within the DMA's so that findings from a small DMA does not exert undue influence on the results of the total sample.

- Notations are made when statistically significant differences exist based upon Region (identified with the following symbol - ⬭).

Methodology

- The objective of this research study was to determine awareness of communications regarding natural gas pipeline safety and understanding of digging regulations among contractors who excavate as part of their regular business services.

- A mail survey was developed and administered among Contractors and Excavators who routinely dig as part of their business. (Additional survey data was collected among a few companies that do not excavate as a regular part of their business.)

- The methodology entailed the creation of survey "kits" mailed to 4,001companies in Michigan. The companies were randomly selected from a list provided by MISS DIG Systems. Each kit contained...
  - A one-page 8.5" x 11" two-sided questionnaire printed in black and ID-coded for geographic (DMA) identification.
  - A two-window outgoing envelope with the customer mailing address in the primary window, and "MISS DIG" in the return address window.
  - A #9 business reply envelope addressed to "Survey Research Center" in Dearborn, Michigan.

- 411 surveys were returned (12% response rate based on deliverable surveys*) by the "cutoff" date, which was mutually agreed upon based on when the number of returns declined to a very small number each day.

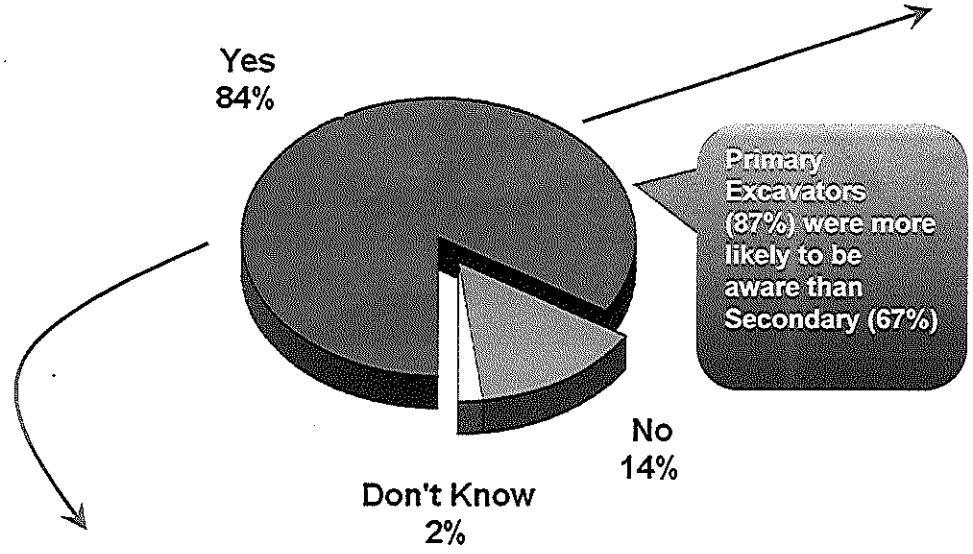
- Among the 411 surveys returned, 49% (200) indicated that excavation was a 'regular business service,' while 210 surveys were from businesses who did not excavate regularly (51%). Although companies that did not excavate regularly did not have to complete the survey, 64 did so and provided usable data – thus the findings in this report are based upon 264 completed surveys. Significant differences (95% confidence interval) between Primary Excavators and Secondary Excavators are identified where appropriate (identified with various symbols throughout the report - ⬭).

- Not all respondents answered every question in the survey. In some cases, this was because they were following instructions to skip over later questions based on how they answered earlier questions. In other cases, some respondents opted not to answer one or more questions. Thus, the number of respondents answering can vary by question. In this report, the number of respondents answering a particular question is indicated with (N=).

* 577 of the 4,001 surveys were returned by the US Post Office as 'undeliverable – 14% of the total mailing.

Pipeline Communication Awareness

In The Last 12 Months, Have You Seen Or Heard Any Information Relating To Natural Gas Pipeline Safety? (N=264)



Where Did You See Or Hear The Information Regarding Natural Gas Pipeline Safety? (N=219)

60%	U.S. mail
35%	Handouts / inserts / flyers
35%	Newspaper / television / radio
26%	Information posted near pipelines
23%	Sign / billboard
20%	Internet
14%	MISS DIG event / DPA meeting
13%	Face-to-face meetings
13%	E-mail
5%	Other
3%	Can't recall / don't know

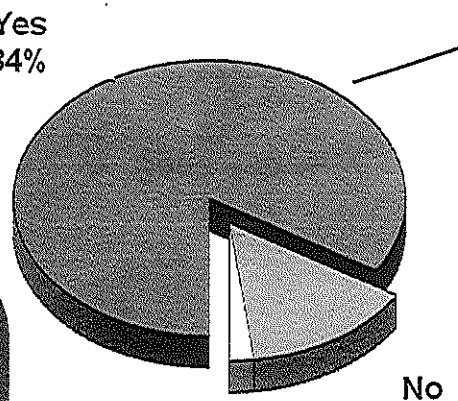
92%	Calling 811 or MISS DIG before you dig
46%	Presence of natural gas pipeline in your community
46%	Potential natural gas pipeline hazards
41%	How to respond to a natural gas pipeline leak
33%	Recognizing or detecting a natural gas pipeline leak
29%	Location of natural gas pipeline in your community
5%	Don't remember

Secondary Excavators (90%) were as likely to recall information regarding MISS DIG as Primary (92%). Secondary were less likely to mention any other type of information.

← ***Which Of The Following Were Discussed In The Information You Saw / Heard?*** (N=216)

Pipeline Communication Awareness (Cont.)

In The Last 12 Months, Have You Seen Or Heard Any Information Relating To Natural Gas Pipeline Safety? (N=264)



All Excavators (100%) in the UP had seen or heard some type of information; lowest awareness was seen in the North Lower (77%).

Excavators in Southeast MI were less likely to mention seeing information regarding *'recognizing a leak'* (27%) than those in other areas. (37% to 50%)

Where Did You See Or Hear The Information Regarding Natural Gas Pipeline Safety? (N=219)

	SE MI	SW MI	North Lower	UP
US Mail	58%	68%	54%	57%
Newspaper / TV / Radio	40%	26%	32%	37%
Handouts / inserts / flyers	36%	35%	31%	35%
Info posted near pipelines	27%	26%	22%	29%
Sign / billboard	24%	26%	15%	12%
Internet	20%	21%	24%	6%
Email	11%	18%	10%	6%
Face-to-Face meetings	11%	11%	24%	18%
MISS DIG event / DPA meeting	11%	14%	25%	37%
Social Media	0%	9%	5%	0%
Other	4%	5%	5%	6%
Can't recall / don't know	4%	2%	0%	2%

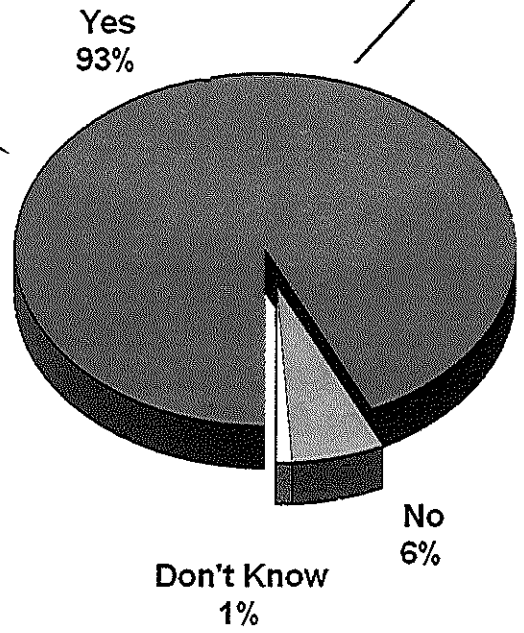
Significant Difference

Excavators in the UP were less likely to mention *'Internet'* (6%) than the other areas, while Southeast MI (11%) and Southwest MI (14%) were less likely to mention *'MISS DIG event'* compared to UP (37%).

MISS DIG Awareness

Have you ever heard of 811 / MISS DIG (services that companies and individuals can contact before digging to have underground facilities such as pipelines marked)? (N=264)

Secondary Excavators (87%) were just as likely to be aware as Primary (94%)



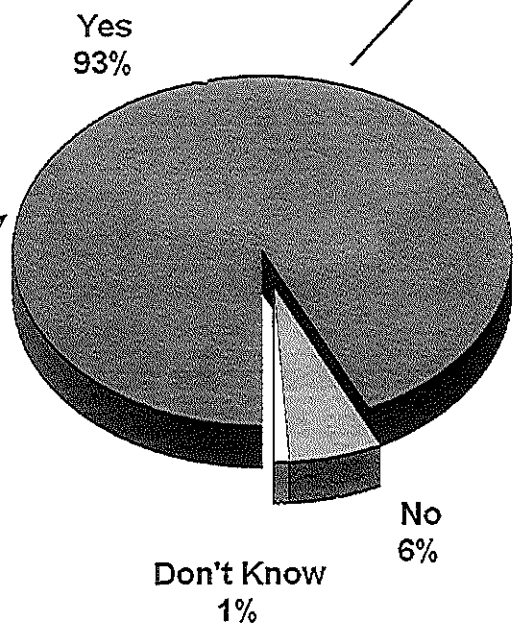
If yes, where have you seen or heard information regarding 811/ MISS DIG? (N=215)

55%	U.S. mail
39%	Handouts / inserts / flyers
34%	Television
33%	Billboards
30%	Radio
21%	Internet
18%	Face-to-face meeting
18%	Information posted near pipelines
7%	Booth at Home Improvement Show
3%	Social Media Sites
2%	NASCAR events
7%	Other
4%	Can't recall / don't know

⬡ Primary is Significantly Higher

MISS DIG Awareness (Cont.)

Have you ever heard of 811 / MISS DIG (services that companies and individuals can contact before digging to have underground facilities such as pipelines marked)? (N=264)



All Excavators (100%) in the UP had seen or heard some type of information regarding MISS DIG; all other areas ranged from 93% to 94%.

If yes, where have you seen or heard information regarding 811/ MISS DIG? (N=215)

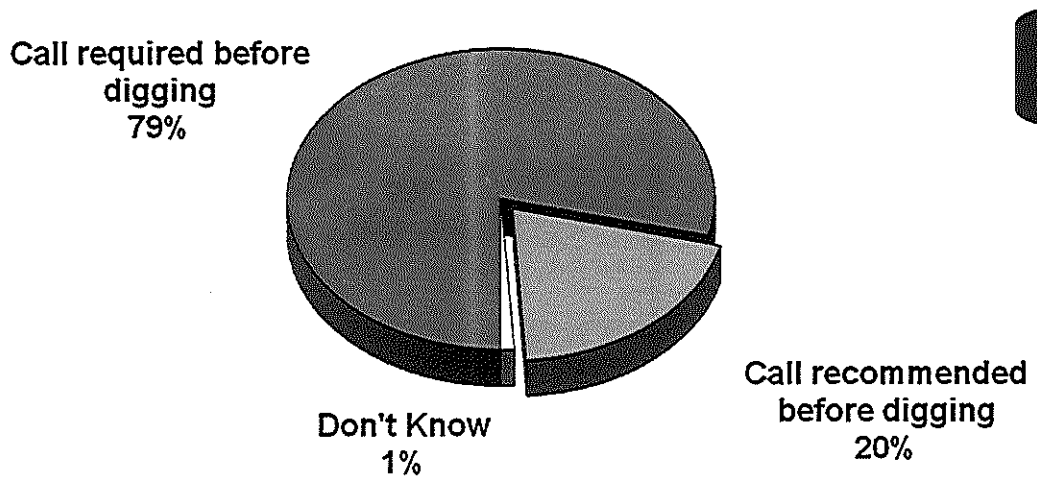
	SE MI	SW MI	North Lower	UP
US Mail	49%	65%	64%	63%
Handouts / inserts / flyers	40%	40%	36%	35%
Billboards	33%	38%	20%	24%
TV	33%	32%	42%	37%
Radio	31%	31%	24%	26%
Internet	18%	26%	31%	13%
Face-to-Face meetings	16%	17%	32%	26%
Info posted near pipelines	16%	20%	20%	28%
Booth at Home Improvement Show	4%	8%	19%	11%
NASCAR events	0%	5%	5%	4%
Social Media	0%	9%	5%	0%
Other	7%	10%	3%	6%
Not sure	4%	3%	2%	4%

Significant Difference

Excavators in the UP were less likely to mention seeing MISS DIG information on the '*Internet*' (13%) than Southwest Lower (26%) and Northern Lower (31%). Those in Northern Lower were more likely to mention '*Home Improvement Shows*' than in Southern MI

Understanding Of MISS DIG

Which One Of The Following Best Describes Your Understanding Of Michigan's MISS DIG Program? (N=258)



There were no significant differences based on Region.

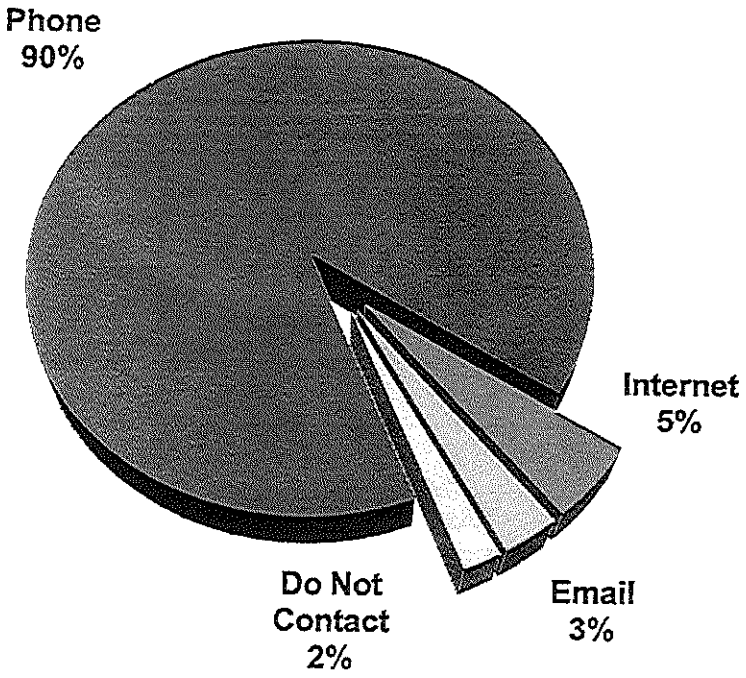
⬡ Primary is Significantly Higher

⬡42%	Discussed in meetings / training
⬡28%	Included in project plans and drawings
32%	Not communicated - all calls made by one individual or office
26%	Written company procedures
17%	Posted in a public area
4%	Not required / don't know

← ***How Is The Information Regarding Who To Call Before Digging Communicated Within Your Organization?*** (N=218)

Contacting MISS DIG

How Does Your Organization Normally Contact MISS DIG? (N=247)



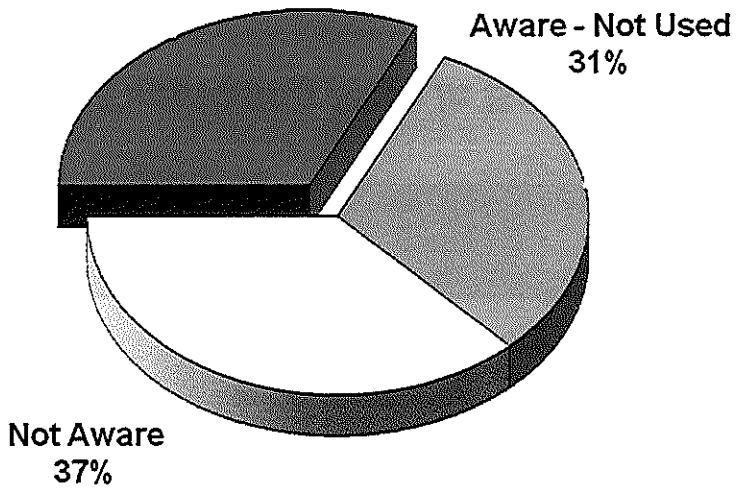
How Many Times Has Your Organization Contacted MISS DIG In The Past 12 Months?

(N=208)

	Primary	Secondary
0 / none	7%	36%
1 time	5%	23%
2 times	15%	15%
3 to 5	20%	13%
6 to 9	11%	3%
10 to 19	15%	8%
20 to 29	8%	3%
30 to 49	6%	0%
50 to 99	9%	0%
100 or more	4%	0%
Median =	*6*	*1*
Average =	*25*	*3*

Awareness / Use of Request Tools

Are you aware that MISS DIG staking requests can be initiated through website entry at www.missdig.org? (N=255)

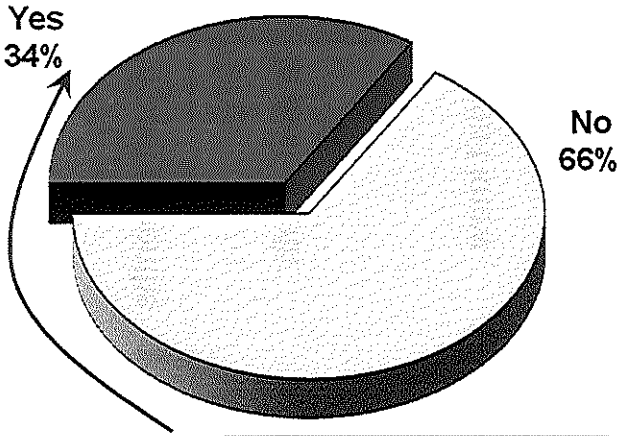


	Primary	Secondary
Aware & Used	31%	33%
Aware but Not Used	35%	15%
Not Aware	34%	52%

Are you using Remote Ticket Entry or e-Locate when entering staking requests on the website? (N=65)

74% Remote Ticket Entry (RTE)
59% E-Locate
18% Neither

Would you be interested in ticket entry via the web by either Remote Ticket Entry (RTE) or e-Locate? (N=241)



Excavators in Northern Lower (22%) were less interested in RTE or e-Locate compared to UP (43%)

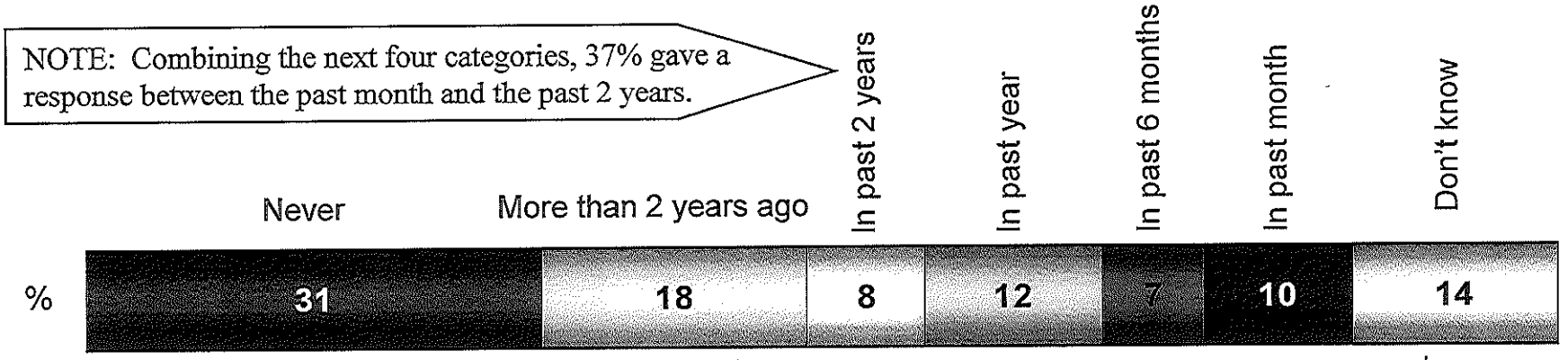
	Primary	Secondary
Yes	36%	18%
No	64%	82%

38% of those not aware of the capability would be interested in ticket entry via the web.

Unexpected Pipeline Encounter

When Was The Last Time Your Organization Unexpectedly Encountered A Natural Gas Pipeline While Digging? (N=257)

NOTE: Combining the next four categories, 37% gave a response between the past month and the past 2 years.



By Excavating Role in Business

	Primary	Secondary
In past month	13%	0%
In past 6 months	9%	0%
In past year	14%	2%
In past 2 years	9%	4%
More than 2 years ago	18%	17%
Never	24%	62%
Don't know	13%	15%

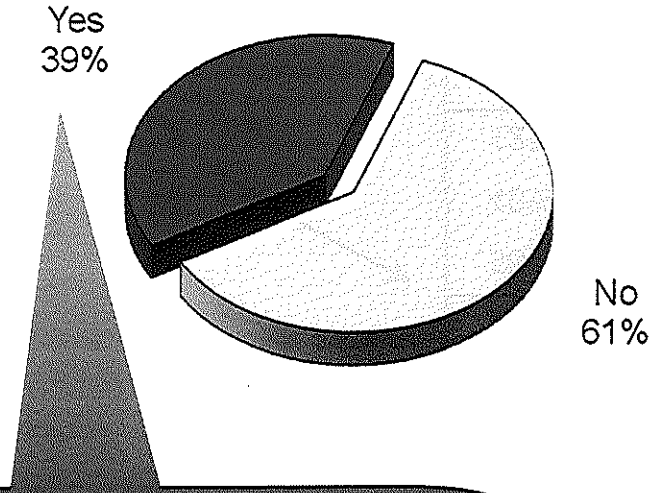
What Was The Primary Reason For The Unexpected Encounter?* (N=130)

34%	Line mismarked
26%	Line not marked
17%	Old or unused line
14%	Line too shallow
1%	On-site accident
5%	Other
3%	Don't know

Excavators in the UP were less likely to have encountered a pipeline in the past 6 months (0%) than in the other areas (ranging from (14% to 18%).

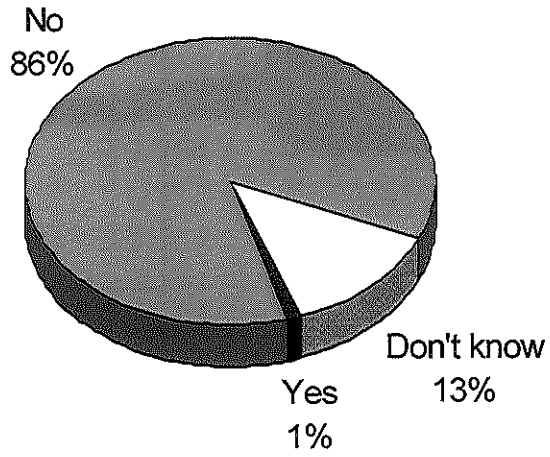
Awareness / Usage of Reporting Tools

Are you aware that MISS DIG offers Positive Response - a program that allows participating utilities to post locating responses? (N=250)



Although not quite significant, Primary Excavators (42%) were directionally more likely to be aware of Positive Response than Secondary (28%)

Have You Or Members Of Your Organization Ever Used The Damage Information Reporting Tool (DIRT)?
(N=255)



There were no significant differences based on Region.

Signs of Pipeline Leaking

From What You Have Read, Heard, Or Your Own Experience, Which Of The Following Are The Kinds Of Things That Might Tell You That A Natural Gas Pipeline Is Leaking? (N=215)

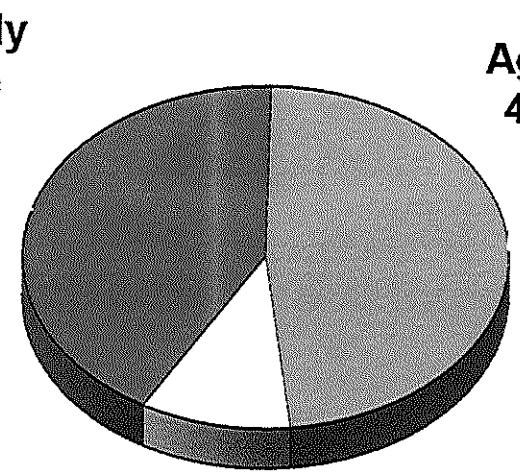
92%	Odor of rotten eggs
80%	A hissing sound
66%	Bubbles in a pool of standing water
56%	Dirt blowing
40%	Dead vegetation
12%	Ice or frozen soil
3%	Don't know

Excavators in Southeast MI were less likely to mention 'ice or frozen soil' (4%) than those in other areas. (20% to 25%).

Primary Excavators exhibited higher awareness of most signs of a natural gas leak compared to businesses who did not excavate on a regular basis – other than 'odor of rotten eggs' and 'dead vegetation' – mentioned by all with the same frequency.

Perception of Utility Safety Communications

How Much Do You Agree or Disagree That Michigan's MISS DIG Program Does A Good Job Of Informing People In Your Industry About Natural Gas Pipeline Safety? (N=258)



There were no differences in agreement between Primary and Secondary Excavators.

There were no differences in agreement based on Region.

Note: Disagree = 0%

Appendix

Questionnaire

MISS DIG
c/o Survey Research Center
22312 Garrison St
Dearborn MI 48124-9813

«RespID» <<DMA>>
«Company»
Mailing Address»
«City», «State» «Zip»

We need your help! The State of Michigan requires us to measure public awareness of the presence of natural gas pipelines and steps to prevent and respond to pipeline emergencies. Your participation in this survey will help ensure the safety of yourself and your community. **Please pass this form to whoever has the most contact with utilities at your company and ask them to take a few minutes to complete the information.** A response is requested **by June 7, 2013** and a postage-paid envelope is included to speed its return. All responses will remain strictly confidential. If you have any questions regarding this survey, please call the company conducting the research for us at (313) 406-2590. Thank you in advance for your time and assistance.

Please mark your survey responses with an "X," keeping the "X" inside the box as much as possible. Use blue or black pen, not a highlighter or pencil. Thank you.

EXAMPLE: ☒

1. Does your company excavate as part of its regular business services?

- ☐ yes
- ☐ no ... *please ☒ and return your survey in the enclosed envelope*
- ☐ don't know ... *please ☒ and return your survey in the enclosed envelope*

2. In the last 12 months, have you seen or heard any information relating to utility safety?

- ☐ yes
- ☐ no ... *please ☒ and skip to #5*
- ☐ don't know ... *please ☒ and skip to #5*

3. Where did you see or hear the information regarding utility safety? *(please ☒ all that apply)*

- ☐ US mail
- ☐ email
- ☐ Internet
- ☐ face-to-face meeting
- ☐ handouts / inserts / flyers
- ☐ calendars
- ☐ newspaper / television / radio
- ☐ sign / billboard
- ☐ MISS DIG Event / DPA Meeting
- ☐ information posted near pipelines (for example, signs near pipelines)
- ☐ other *(please specify)*: _____
- ☐ can't recall / don't know

4. Which of the following topics were discussed in the information you saw / heard? *(please ☒ all that apply)*

- ☐ presence of natural gas pipeline in your community
- ☐ location of natural gas pipeline in your community
- ☐ potential natural gas pipeline hazards
- ☐ recognizing or detecting a natural gas pipeline leak
- ☐ how to respond to a natural gas pipeline leak
- ☐ calling 811 or MISS DIG before you dig
- ☐ don't remember

5. Have you ever heard of 811 / MISS DIG (services that companies and individuals can contact before digging to have underground facilities such as pipelines marked)?

- ☐ yes ... *please ☒ and answer Q6*
- ☐ no ... *please ☒ and skip to Q7*
- ☐ don't know ... *please ☒ and skip to Q7*

6. If yes, where have you seen or heard information regarding 811/ MISS DIG? *(please ☒ all that apply)*

- ☐ US Mail
- ☐ billboards
- ☐ Internet
- ☐ face to face meetings
- ☐ booths at home improvement shows
- ☐ promotions at sporting events
- ☐ handouts/inserts/flyers
- ☐ television
- ☐ radio
- ☐ info posted near pipelines
- ☐ NASCAR events
- ☐ social media sites
- ☐ other *(please specify)*: _____
- ☐ not sure

Questionnaire (Cont.)

7. **Which one of the following best describes your understanding of Michigan's MISS DIG program?** *(please ☒ only one)*
   - ☐ I am not familiar with this program
   - ☐ a call is required before digging
   - ☐ a call is recommended before digging
   - ☐ no action is required
   - ☐ don't know

8. **How is the information regarding who to call before digging communicated within your organization?** *(please ☒ all that apply)*
   - ☐ posted in a public area
   - ☐ electronically (email or web)
   - ☐ discussed in meetings / training
   - ☐ written company procedures
   - ☐ included in project plans and drawings
   - ☐ not communicated - all the calls are made by one individual or office
   - ☐ not communicated - not required
   - ☐ don't know

9. **How many times has your organization contacted MISS DIG in the past 12 months? Please use your best guess if necessary.**
   (please fill in a number below; 0 if none)

   #_____ times in past 12 months

10. **How does your organization normally contact MISS DIG?** *(please ☒ only one)*
    - ☐ telephone
    - ☐ email
    - ☐ Internet
    - ☐ face-to-face
    - ☐ other
    - ☐ do not contact

11. **Are you aware that MISS DIG staking requests can be initiated through website entry at www.missdig.org?** *(please ☒ only one)*
    - ☐ yes – aware & used *(please ☒ and answer Q12)*
    - ☐ yes – aware but not used *(please ☒ & go to Q13)*
    - ☐ not aware ... *please ☒ & go to Q13)*

12. **Are you using Remote Ticket Entry or e-Locate when entering staking requests on the website?** *(please ☒ all that apply)*
    - ☐ yes – Remote Ticket Entry (RTE)
    - ☐ yes – e-Locate
    - ☐ neither ... *please ☒ and answer Q13*

13. **Would you be interested in ticket entry via the web by either Remote Ticket Entry (RTE) or e-Locate?**
    - ☐ yes
    - ☐ no

14. **Are you aware that MISS DIG offers Positive Response - a program that allows participating utilities to post locating responses? Yes No**
    - ☐ yes
    - ☐ no

15. **When was the last time your organization unexpectedly encountered a utility pipe or cable while digging?**
    - ☐ within the past month
    - ☐ within the past six months
    - ☐ within the past year
    - ☐ within the past two years
    - ☐ more than two years ago
    - ☐ never ... *please ☒ and skip to Q17*
    - ☐ don't know ... *please ☒ and skip to Q17*

16. **What was the primary reason for the unexpected encounter, if one occurred?**
    (please ☒ only one)
    - ☐ line not marked
    - ☐ line mismarked
    - ☐ line was too shallow
    - ☐ old or unused line
    - ☐ on-site accident
    - ☐ other
    - ☐ don't know

17. **From what you have read, heard, or your own experience, which of the following are the kinds of things that might tell you that a natural gas pipeline is leaking?** *(please ☒ all that apply)*
    - ☐ ice or frozen soil
    - ☐ odor of rotten eggs
    - ☐ a hissing sound
    - ☐ bubbles in a pool of standing water
    - ☐ dirt blowing
    - ☐ dead vegetation
    - ☐ don't know

18. **Have you or members of your organization ever used the Damage Information Reporting Tool (DIRT)?**
    - ☐ yes
    - ☐ no
    - ☐ don't know

19. **How much do you agree that Michigan's MISS DIG program does a good job of informing people in your industry about utility safety?**
    - ☐ strongly agree
    - ☐ agree
    - ☐ disagree
    - ☐ strongly disagree
    - ☐ don't know

Thank You!
(Please return your survey in the postage-paid envelope provided.)

MISS DIG New Caller Survey Results

Category	Percent	Count
Just know to call	40.85%	9396
Contractor	26.63%	6125
TV	5.53%	1271
Utility Company	5.39%	1241
Word of Mouth	4.88%	1122
Billboard	2.99%	688
Friend	2.92%	671
Municipality	2.16%	498
Utility Bill Stuffer	2.06%	475
Social Media	1.16%	267
Neighbor	1.15%	265
Radio	1.13%	260
MISS DIG website	0.65%	149
811	0.43%	99
Bumper sticker/Truck Lettering	0.40%	91
Pedestal/Utility Box	0.40%	91
Magazine	0.39%	89
Website Banner	0.35%	80
Newspaper Article	0.19%	43
Locator	0.14%	33
MISS DIG Employee	0.08%	19
Pipeline Marker	0.07%	15
Manual from Equipment Rental Company	0.05%	12
Fuel Tanks	0.01%	3
Race Car	0.00%	1
Total	100%	23004

County	811	Billboard	Bumper sticker / Truck Lettering	Contractor	Friend	Fuel Tanks	Just know to call	Locator	Magazine	Manual from Equipment Rental Company	MISS DIG Employee	MISS DIG website	Municipality	Neighbor	Newspaper Article	Pedestal / Utility Box	Pipeline Marker	Race Car
MACKINAC	0	7.27	0	36.36	1.82	0	25.45	0	0	0	0	0	1.82	1.82	0	0	0	0
MASON	0	6.54	0.93	24.30	1.87	0	38.32	0	0	0	0	1.87	1.87	2.80	0	1.87	0	0
KENT	0.38	6.05	0.57	29.96	3.02	0	39.04	0	0.19	0	0.19	0.66	1.42	1.42	0	0.57	0.09	0
OGEMAW	1.49	5.97	1.49	29.85	0	0	26.87	0	0	0	0	0	1.49	1.49	0	0	0	0
MISSAUKEE	0	5.08	1.69	28.81	3.39	0	40.68	0	3.39	0	0	0	0	3.39	0	1.69	0	0
CLARE	0	5.04	0.84	18.49	0.84	0	46.22	0	0	0	0	0	0	0.84	0	0.84	0	0
OTSEGO	0.96	4.81	0	30.77	0.96	0	48.08	0.96	0	0	0	0	0	0	0	0	0	0
GLADWIN	0	4.80	0	28.00	3.20	0	42.40	0.80	0	0	0	0.80	0.80	0.80	0	1.60	0	0
CHIPPEWA	0	4.76	0	27.78	3.17	0	39.68	0	0	0	0	0	2.38	0	0	0	0	0
MONTMORENCY	0	4.65	0	34.88	0	0	41.86	0	0	0	0	0	0	4.65	0	2.33	0	0
LUCE	0	4.55	0	27.27	0	0	54.55	0	0	0	0	0	4.55	0	0	0	0	0
MECOSTA	0.76	4.55	0.76	24.24	1.52	0	46.97	0	0	0	0	0	3.03	0.76	0	0.76	0	0
ARENAC	0	4.48	0	26.87	0	0	43.28	0	0	0	0	0	1.49	1.49	0	0	0	0
MANISTEE	0	4.40	0	30.77	3.30	0	40.66	0	1.10	0	0	0	1.10	1.10	0	0	0	0
ANTRIM	0	4.27	0.85	38.46	0.85	0	38.46	0	0.85	0	0	0	1.71	0	0	0	0	0
OTTAWA	0.81	4.19	0.32	28.06	3.06	0	37.26	0.16	0.81	0	0.48	1.13	1.61	0.97	0.32	0.65	0	0
INGHAM	0.16	4.16	0.32	22.08	2.72	0	39.52	0.16	0.16	0	0	0.80	1.76	1.12	0	0.32	0	0
OSCEOLA	0	4.04	0	21.21	4.04	0	46.46	1.01	1.01	0	0	0	3.03	2.02	1.01	2.02	0	0
MUSKEGON	0.85	3.97	1.13	23.80	3.68	0	41.93	0.28	0.85	0	0.28	0.57	1.70	0.85	0.28	1.13	0.28	0
LENAWEE	0	3.89	0.35	25.09	4.95	0	36.75	0	1.06	0	0	0.71	2.47	1.06	0.35	0.35	0	0
BAY	0	3.77	0.31	25.79	3.46	0	39.94	0.94	0.31	0	0	0	2.20	0.94	0	0	0	0
WAYNE	0.33	3.73	0.17	27.03	4.51	0.06	36.21	0.17	0.11	0.11	0	0.83	2.17	1.50	0.11	0.28	0.11	0
SAGINAW	0.54	3.58	0.72	24.01	2.69	0	39.78	0.18	0.18	0.18	0.18	0.72	2.15	0.54	0.18	0.72	0.18	0
CASS	1.98	3.56	0	30.04	3.95	0	35.57	0	0.79	0	0	1.19	3.16	0.79	0.79	0	0	0
GENESEE	0.30	3.53	0.71	22.58	3.02	0	41.63	0.20	0.30	0	0	0.20	1.11	1.01	0.20	0	0	0
ST JOSEPH	1.16	3.47	0.58	27.75	2.89	0	33.53	0.58	1.16	0	0	0.58	2.89	1.16	0.58	0.58	0	0
CLINTON	0.95	3.32	0.95	20.85	3.79	0.47	46.45	0	0.95	0	0	0.47	1.90	0.95	0	0	0.47	0
VAN BUREN	0	3.15	0	18.02	1.80	0	49.55	0	0	0	0	0	4.05	0.90	0	0	0	0
GOGEBIC	3.14	3.14	0	27.67	3.77	0	37.11	0.63	0.63	0	0	0.63	5.03	0.63	0.63	0	0	0
WASHTENAW	0.38	3.14	0.38	26.92	3.27	0	43.90	0.25	0	0.13	0.13	1.01	1.26	0.63	0.13	0.38	0.13	0
MIDLAND	0.68	3.04	0.34	25.34	2.03	0	47.64	0	0.68	0	0	0.34	1.01	0.68	0.34	0.34	0	0
MONROE	0.27	3.01	0.55	27.95	2.74	0	36.44	0.27	1.10	0	0	0.27	4.11	0.82	0	0.55	0.27	0
GRATIOT	0	2.97	0.99	19.80	2.97	0	52.48	0	0	0	0	0.99	2.97	0	0	0	0	0
ALCONA	1.47	2.94	0	27.94	0	0	41.18	0	1.47	0	0	0	2.94	0	0	0	2.94	0
EMMET	0.73	2.92	0	33.58	1.46	0	40.88	0	0	0	0.73	0	3.65	0.73	0	0.73	0	0
SHIAWASSEE	1.46	2.91	0	14.56	1.94	0	52.91	0	0	0	0.49	0.97	2.43	0.97	0	0	0.49	0
TUSCOLA	0	2.88	0.48	30.29	3.85	0	36.54	0	0	0	0.48	0.48	1.92	0.96	0.48	0	0	0
JACKSON	0.78	2.87	1.31	22.19	4.96	0	35.51	0.26	0.26	0.26	0	0.26	2.35	1.57	0.26	0.26	0	0
CHARLEVOIX	0	2.86	0	30.29	1.71	0	46.86	0	1.14	0	0	1.14	1.71	1.71	0	0	0	0
SCHOOLCRAFT	0	2.70	0	32.43	0	0	35.14	0	0	0	0	0	5.41	0	0	0	0	0
OAKLAND	0.07	2.67	0.44	31.12	1.96	0	39.72	0.15	0.19	0.04	0.04	0.93	1.85	1.30	0.15	0.33	0.04	0
KALKASKA	0	2.56	0	25.64	1.28	0	50.00	0	1.28	0	0	0	1.28	1.28	1.28	0	0	0
GRAND TRAVERSE	0	2.52	0.63	25.87	0.63	0	48.90	0	0.63	0	0	0.95	1.26	1.89	0.32	0.63	0	0
LIVINGSTON	0.47	2.51	0.47	30.14	1.88	0	43.64	0.16	0	0	0.16	0.63	1.26	1.26	0.16	0.78	0	0
ST CLAIR	0.74	2.45	0.74	24.02	4.17	0	45.59	0	0	0	0.25	0.25	1.23	0.25	0.25	0.74	0	0

County	811	Billboard	Bumper sticker / Truck Lettering	Contractor	Friend	Fuel Tanks	Just know to call	Locator	Magazine	Manual from Equipment Rental Company	MISS DIG Employee	MISS DIG website	Municipality	Neighbor	Newspaper Article	Pedestal / Utility Box	Pipeline Marker	Race Car
CALHOUN	0	2.33	0.33	23.33	3.00	0	37.67	0.33	0.67	0.33	0.33	0.67	3.33	0.67	0	0	0	0
BERRIEN	1.23	2.29	0.18	31.16	3.52	0.18	35.04	0	0.70	0.18	0	0.88	3.52	1.23	0	0.35	0	0
KALAMAZOO	0	2.29	0.57	24.38	3.43	0	41.52	0	0.38	0	0	0.57	2.48	1.14	0.19	0.57	0.19	0
LAKE	0	2.27	0	31.82	2.27	0	36.36	0	0	0	0	2.27	6.82	0	0	4.55	0	0
MACOMB	0.33	2.27	0.40	24.75	3.27	0	39.09	0.07	0.20	0.13	0.07	0.53	3.00	1.93	0.13	0.33	0	0.07
MENOMINEE	3.03	2.27	0	23.48	3.03	0	37.12	0	1.52	0	0	2.27	3.79	0	0	0.76	0	0
BRANCH	0.71	2.14	0	27.86	2.86	0	41.43	0	0.71	0	0	2.14	5.00	0	1.43	0	0	0
MARQUETTE	0	2.05	0	24.66	2.40	0	39.38	0	0	0	0	1.37	3.42	1.71	0.68	0.34	0	0
BARRY	0.65	1.96	0.65	28.76	2.61	0	41.83	0	1.31	0	0	0	1.96	1.31	1.96	0.65	0	0
ROSCOMMON	0	1.95	0	23.38	1.95	0	42.86	0	0.65	0	0	0	1.95	2.60	0	0	0	0
LAPEER	0	1.92	0.38	18.77	1.53	0	55.17	0	0.38	0	0	0.38	1.15	1.53	0.38	0	0.38	0
DELTA	0.62	1.85	0	25.93	4.32	0	43.83	0	1.23	0	0	0.62	2.47	3.09	0	0.62	0	0
HILLSDALE	0	1.85	0	18.52	3.70	0	50.00	0	1.85	0	0	0	2.78	0	0.93	0.93	0	0
ISABELLA	0.56	1.69	0	28.65	1.12	0	43.26	0	0.56	0	0	0	2.25	1.12	0	1.12	0	0
ONTONAGON	0	1.61	0	24.19	3.23	0	50.00	0	1.61	0	1.61	0	3.23	0	0	0	0	0
EATON	0.32	1.58	0.95	18.99	3.48	0	43.99	0	0	0	0	0.63	0.95	0.32	0.32	0.63	0	0
HURON	0.52	1.55	0	28.87	3.09	0	45.36	0	0.52	0	0	1.03	3.09	1.55	0	0	0	0
HOUGHTON	0	1.50	0.75	25.56	3.76	0	39.85	0	0.75	0	0	1.50	5.26	0	0	0	0	0
CHEBOYGAN	0	1.38	0.69	27.59	4.14	0	46.21	0	0.69	0	0	0	1.38	0.69	0	0	0	0
ALGER	1.37	1.37	0	12.33	1.37	0	47.95	0	0	0	0	0	5.48	1.37	1.37	0	0	0
IONIA	1.28	1.28	0	26.28	1.28	0	41.67	0	0	0	0	0	2.56	1.28	0.64	0	0	0
ALLEGAN	0.63	1.27	0.32	26.67	2.54	0	43.49	0	1.59	0	0.32	0.63	2.22	0.95	0.32	0.95	0.32	0
BENZIE	0	1.27	0	32.91	0	0	46.84	0	0	0	0	0	2.53	0	0	0	0	0
IRON	1.23	1.23	0	27.16	4.94	0	35.80	1.23	0	0	0	2.47	2.47	0	0	0	0	0
SANILAC	1.82	1.21	0	35.15	3.64	0	41.82	0	0	0	0	0	0.61	0.61	0	1.21	0	0
MONTCALM	0.60	1.19	0	23.21	2.38	0	48.81	0.60	0	0	0.60	0	0.60	1.19	0.60	0.60	0	0
WEXFORD	0.92	0.92	0	22.94	2.75	0	43.12	0	0.92	0	0	1.83	1.83	0.92	0	1.83	0	0
NEWAYGO	0	0.84	1.68	26.89	5.88	0	42.86	0	1.68	0	0	0.84	3.36	0.84	0	0	0	0
ALPENA	0	0.81	0	29.84	4.03	0	38.71	0.81	0	0	0	0.81	1.61	0.81	0	0	0	0
IOSCO	0	0.81	0	29.84	4.84	0	41.94	0	1.61	0	0	0.81	0.81	0.81	0	0	0	0
DICKINSON	1.32	0.66	0	31.58	1.32	0	35.53	1.32	0.66	0	0	0.66	5.26	1.97	0	0	0	0
BARAGA	0	0	0	27.03	8.11	0	43.24	0	2.70	0	0	0	2.70	0	0	0	0	0
CRAWFORD	0	0	0	17.95	0	0	46.15	0	0	0	0	0	5.13	0	2.56	0	0	0
KEWEENAW	5.56	0	0	38.89	0	0	33.33	0	0	0	0	0	11.11	0	0	0	0	0
LEELANAU	0	0	0	32.11	1.83	0	47.71	0	0	0.92	0	0	0.92	0	0	0	0	0
OCEANA	0	0	0	28.17	1.41	0	39.44	0	1.41	0	0	2.82	2.82	1.41	0	0	0	0
OSCODA	0	0	0	32.35	2.94	0	41.18	0	0	0	0	0	8.82	0	0	0	0	0
PRESQUE ISLE	0	0	0	29.23	4.62	0	38.46	0	0	1.54	0	0	4.62	0	0	0	0	0

MISS DIG Internal Ticket Volume Metrics

RAW DATA

Year	Home Ownership Rate	New Private Housing Building Permits	Construction Employment	Presentations	Audience	Exhibit Booths	Damages caused by failure to contact	Ticket Volume
2012		988	127300	73	2871	27	1276.00	663782
2011	74.1	730	125300	50	1842	19	1105.00	618958
2010	74.5	753	121600	34	1865	5	1043.00	568032
2009	74.5	588	127600	28	2240	11		555254
2008	75.9	917	153500					601922
2007	76.4	1592	166700					659148
2006	77.4	2596	178400					712197
2005	77.1	3909	189500					767156
2004	75.6	4338	191800					783225
2003	75.6	4277	190900					779903
2002	76	4078	199800					793566
2001	77.1	3997	206300					831914
2000	77.2	4249	209700					799069
1999	76.5	4402	197100					791178
1998	74.4	4448	187500					747345

STATISTICAL CALCULATIONS

	Home Ownership Rate	New Private Housing Building Permits	Construction Employment	Presentations	Audience	Exhibit Booths	Damages caused by failure to contact	Ticket Volume
Mean	75.87857143	2790.8	171533.333	46.25	2204.5	15.5	1141.33	711509.933
Standard Deviation	1.144336268	1645.807496	32065.6841	20.10596926	480.329401	9.57427108	120.6744933	92598.456

Standardized value:

Year	Home Ownership Rate	New Private Housing Building Permits	Construction Employment	Presentations	Audience	Exhibit Booths	Damages caused by failure to contact	Ticket Volume
2012	-	-1.095389348	-1.37946015	1.330450656	1.387589431	1.201135826	1.115949717	-0.515429041
2011	-1.554238451	-1.252151303	-1.44183212	0.186511774	-0.75469043	0.365563078	-0.301085443	-0.999497587
2010	-1.204690847	-1.2381764	-1.55722027	-0.609271796	-0.70680662	-1.09668923	-0.814864274	-1.549463561
2009	-1.204690847	-1.338431138	-1.37010435	-0.907690635	0.073907614	-0.47000967		-1.687457222
2008	0.018725764	-1.138529266	-0.5623873					-1.183474737
2007	0.455660269	-0.728396245	-0.15073227					-0.565473072
2006	1.329529277	-0.118361352	0.214143776					0.00741985
2005	1.067368575	0.679423324	0.560308229					0.600939466
2004	-0.243434938	0.940085644	0.632035999					0.774473677
2003	-0.243434938	0.903021771	0.603968611					0.738598348
2002	0.106112665	0.782108481	0.881523893					0.886149405
2001	1.067368575	0.732892518	1.084232807					1.30028158
2000	1.154755476	0.886008846	1.190265162					0.945578042
1999	0.54304717	0.97897233	0.797321729					0.860360638
1998	-1.292077748	1.006922136	0.497936256					0.386994214

Correlation Coefficient Between Ticket Volume and		
Home Ownership Rate	0.615160627	Moderatley Correlated
New Private Housing Buliding Permits	0.947907266	Very Highly Correlated
Construction Employment	0.935485936	Very Highly Correlated
Presentations	0.534520863	Moderatley Correlated
Audience	0.336520845	
Exhibit Booths	0.502640506	Moderatley Correlated

STATISTICAL CALCULATIONS (Percentage increase in data)

Year	Home Ownership Rate	New Private Housing Buliding	Construction Employment	Presentations	Audience	Exhibit Booths	Damages caused by failure to contact	Ticket Volume
2012		35%	2%	46%	56%	42%	15%	7%
2011	-1%	-3%	3%	47%	-1%	280%	6%	9%
2010	0%	28%	-5%	21%	-17%	-55%		2%
2009	-2%	-36%	-17%					-8%
2008	-1%	-42%	-8%					-9%
2007	-1%	-39%	-7%					-7%
2006	0%	-34%	-6%					-7%
2005	2%	-10%	-1%					-2%
2004	0%	1%	0%					0%
2003	-1%	5%	-4%					-2%
2002	-1%	2%	-3%					-5%
2001	0%	-6%	-2%					4%
2000	1%	-3%	6%					1%
1999	3%	-1%	5%					6%
1998								

STATISTICAL CALCULATIONS

Percentage increase in standardized value

Year	Home Ownership Rate	Housing Buliding Permits	Construction Employment	Presentations	Audience	Exhibit Booths	Damages caused by failure to contact	Ticket Volume
2012	-	-210%	-238%	33%	39%	20%	12%	-152%
2011	-255%	-225%	-244%	-81%	-175%	-63%	-130%	-200%
2010	-220%	-224%	-256%	-161%	-171%	-210%		-255%
2009	-220%	-234%	-237%					-269%
2008	-98%	-214%	-156%					-218%
2007	-54%	-173%	-115%					-157%
2006	33%	-112%	-79%					-99%
2005	7%	-32%	-44%					-40%
2004	-124%	-6%	-37%					-23%
2003	-124%	-10%	-40%					-26%
2002	-89%	-22%	-12%					-11%
2001	7%	-27%	8%					30%
2000	15%	-11%	19%					-5%
1999	-46%	-2%	-20%					-14%
1998								

STATISTICAL CALCULATIONS (New Private Housing Building Permits as a % of Ticket Volume)

Year	% of Ticket Volume
2012	0.149%
2011	0.118%
2010	0.133%
2009	0.106%
2008	0.152%
2007	0.242%
2006	0.365%
2005	0.510%
2004	0.554%
2003	0.548%
2002	0.514%
2001	0.480%
2000	0.532%
1999	0.556%
1998	0.595%

STATISTICAL CALCULATIONS (Presentations as a % of Ticket Volume)

Year	% of Ticket Volume
2012	0.011%
2011	0.008%
2010	0.006%
2009	0.005%
2008	
2007	
2006	
2005	
2004	
2003	
2002	
2001	
2000	
1999	
1998	

STATISTICAL CALCULATIONS (Construction Employment as a % of Ticket Volume)

Year	% of Ticket Volume
2012	19%
2011	20%
2010	21%
2009	23%
2008	26%
2007	25%
2006	25%
2005	25%
2004	24%
2003	24%
2002	25%
2001	25%
2000	26%
1999	25%
1998	25%

STATISTICAL CALCULATIONS (Audience as a % of Ticket Volume)

Year	% of Ticket Volume
2012	0.433%
2011	0.298%
2010	0.328%
2009	0.403%
2008	
2007	
2006	
2005	
2004	
2003	
2002	
2001	
2000	
1999	
1998	