Montana Broadband Program
Broadband Connection Survey

An Independent Social Assessment of Internet and Cell Phone Service

Prepared For:

Montana Broadband Program
Montana Department of Administration
State Information Technology Service Division

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Introduction

The Montana Broadband Program is part of the Montana Department of Administration, State Information and Technology Services Division (SITSD). The Montana Broadband Program is working to increase broadband awareness and to facilitate the integration of broadband across the state. This report summarizes a study that is intended to understand the current status of Montana citizens' broadband awareness and create a benchmark for which future advancements in broadband awareness and adoption in Montana can be measured. The social science assessment study described in this report was conducted by Christensen Research under sub-contract to Tetra Tech Inc. to measure the availability and use of broadband internet service across Montana.

The primary objective of the social assessment is to determine the percentage of Montana households and businesses that have a working internet connection, along with how they use that connection and their evaluation of its characteristics. This assessment focused on high-speed, broadband internet infrastructure, and also included evaluation of slower speed internet services and cell phones. The survey measured reported behaviors related to technology use and it also assessed opinions about service quality and options. The survey process independently measured these characteristics across two statewide populations, including households and businesses.

Summary Residential Survey Results

This report section presents summary results from selected survey questions organized by urbanization type. Detailed results from all survey questions for both residents and businesses are presented in subsequent sections of the report.

Urbanization categories include:

City – Urban area with population greater than 10,000, *sample size = 884, 39% of total*

Town – Urban area with population less than 10,000, *sample size = 482, 21% of total*

Outskirts – Areas outside, but within 3 miles of urban cores, *sample size = 289, 13% of total*

Rural – Everything not classified in one of the categories above, *sample size = 633, 28% of total*

A map depicting urbanization categories is presented in Appendix C.

Overall Internet Adoption

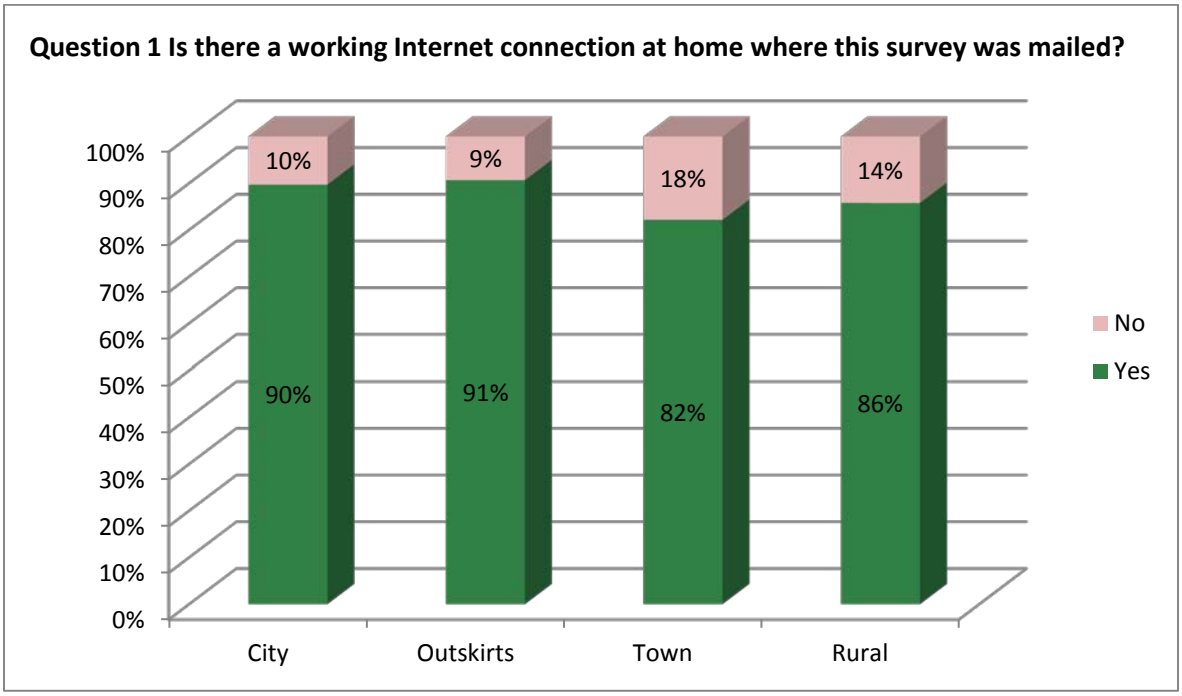
The first survey question addressed whether or not there is a working internet connection at the home where the survey was sent.

Survey Question - Is there a working internet connection at the home where this survey was mailed?

87%	Yes
13%	No

Sample size = 2,286, margin of error: ± 1.4% with 95% confidence.

Chart 1 depicts the breakout by urbanization.



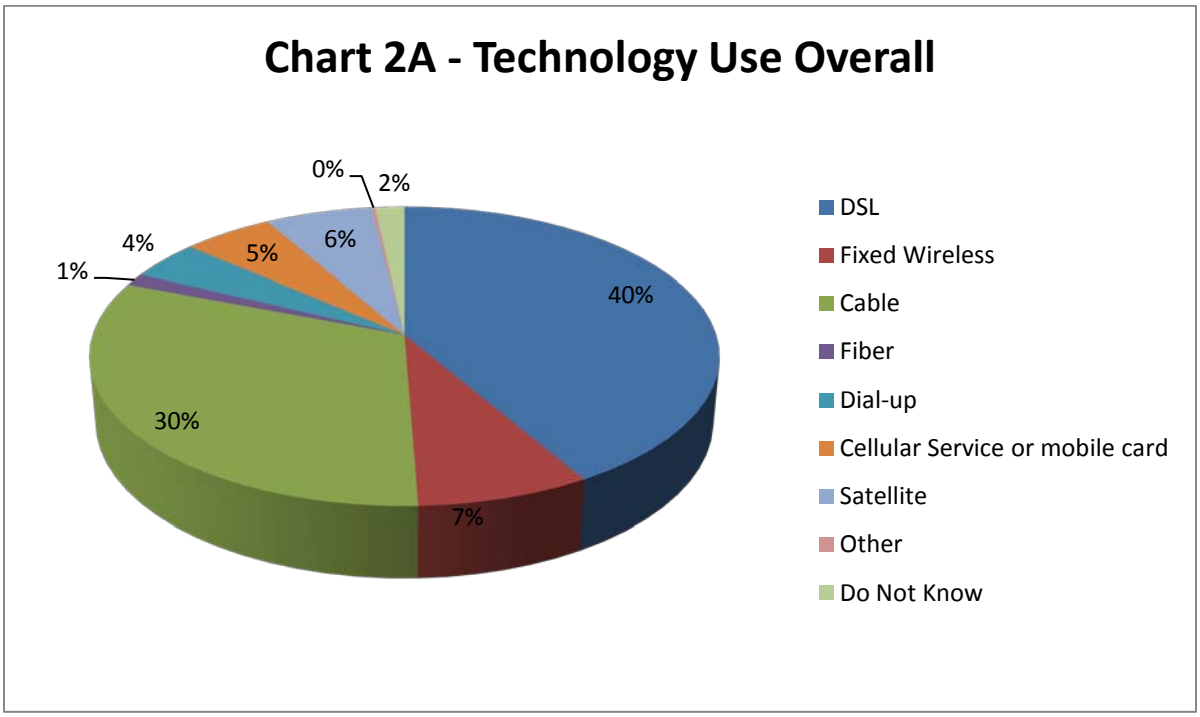
Internet Use By Type of Technology

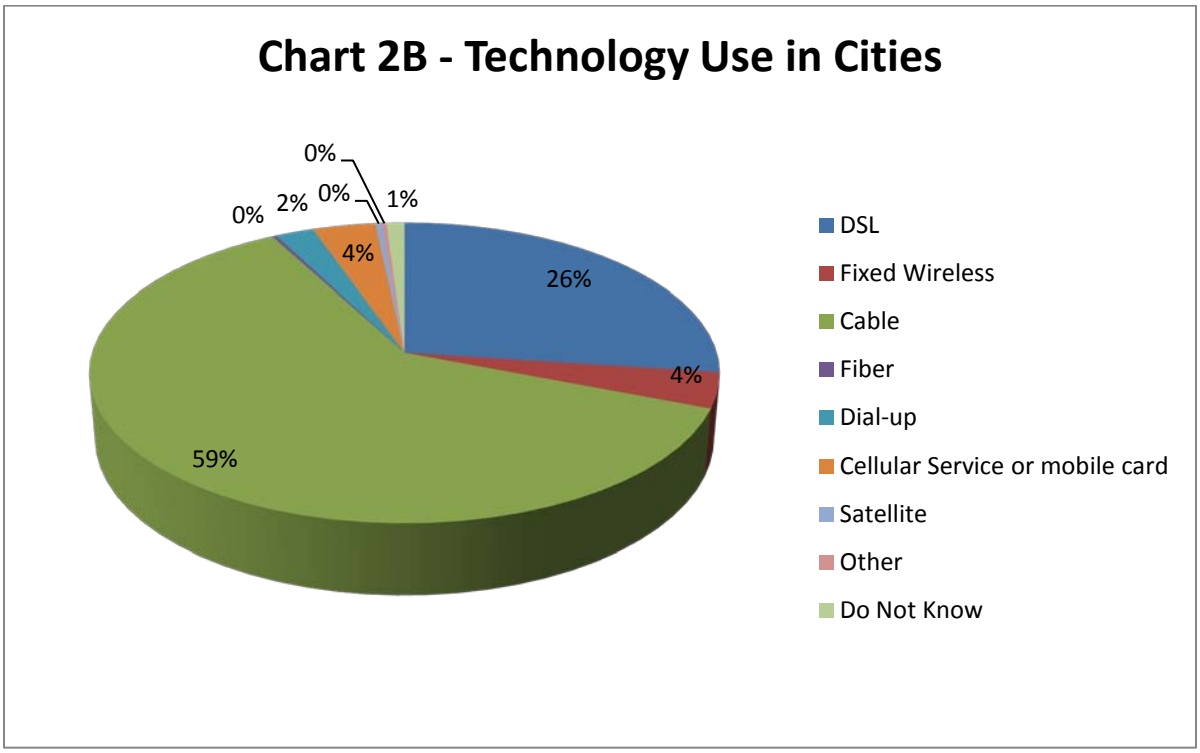
If the household had an internet question they were asked to identify its type.

Survey Question - What is the primary (fastest or most reliable) internet service to this home?

4%	Dial-up phone line - a slower 'landline' connection often provided by a telephone company. This type of connection produces a 'dial-tone' and 'connect-tone' when connecting the modem.
42%	DSL phone line - Digital Subscriber Line, a higher speed landline connection often provided by a telephone company. This type of modem connection is 'always on.'
5%	Cellular service or mobile card - a higher speed connection provided by your cell phone service, may be provided as a data package added to your existing cell phone service.
8%	Fixed wireless - higher speed through an external receiver on your premises or an antenna connected to your computer.
6%	Satellite - Higher speed connection from a satellite dish.
31%	Cable - Higher speed connection often provided by a cable TV company, may be bundled with television and phone services.
1%	Fiber - High speed fiber-optic connection. This is a dedicated circuit, typically used in businesses.
0%	Other *(specify): Two reported using WIFI from an external source at their home.*
2%	Do not know the type of internet connection at this home.

Charts 2A through 2E depict technology use overall and by urbanization type.





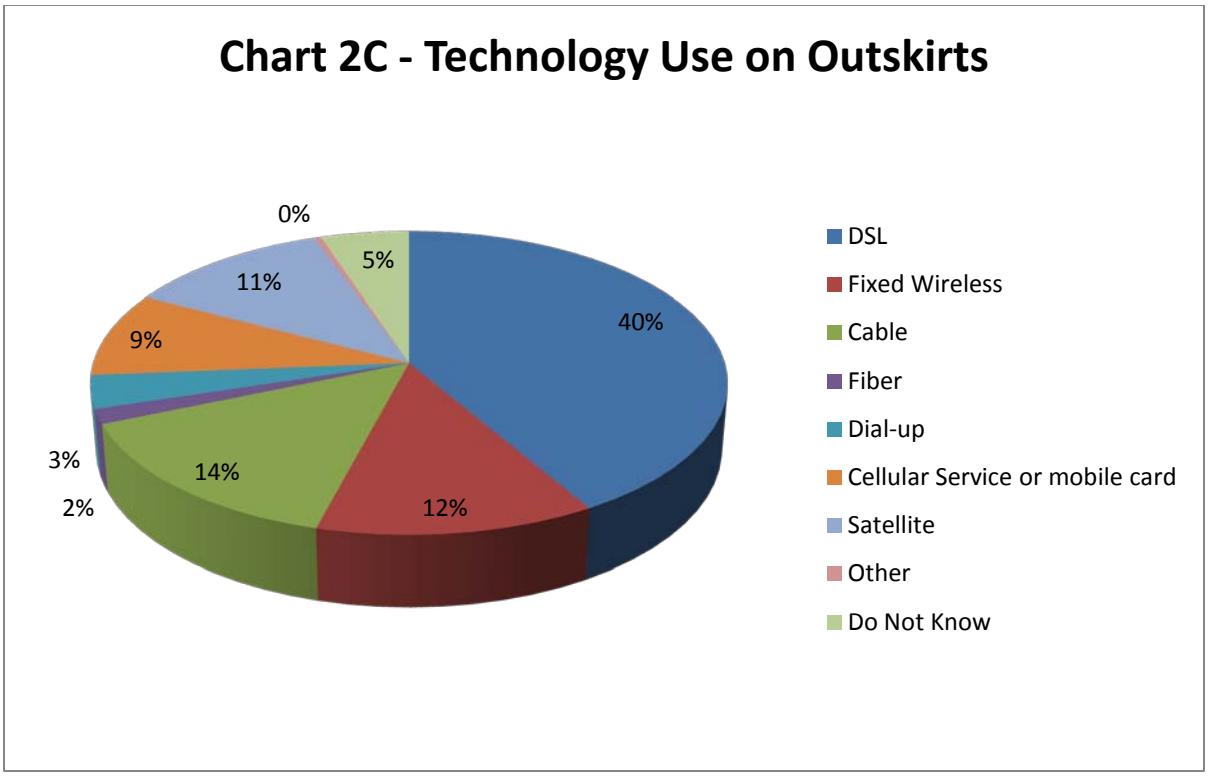


Chart 2C - Technology Use on Outskirts
0%
5%
11%
40%
9%
3%
14%
2%
12%
DSL
Fixed Wireless
Cable
Fiber
Dial-up
Cellular Service or mobile card
Satellite
Other
Do Not Know

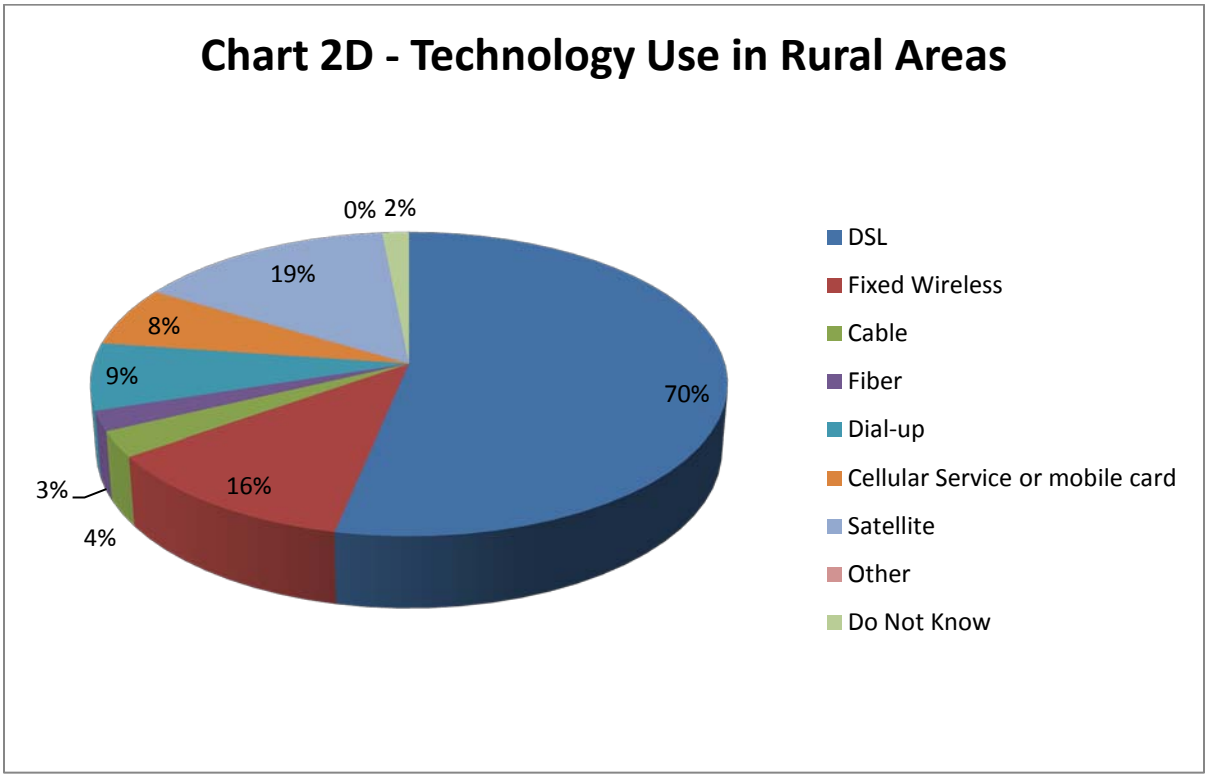


Chart 2D - Technology Use in Rural Areas
0% 2%
19%
8%
9%
70%
3%
16%
4%
DSL
Fixed Wireless
Cable
Fiber
Dial-up
Cellular Service or mobile card
Satellite
Other
Do Not Know

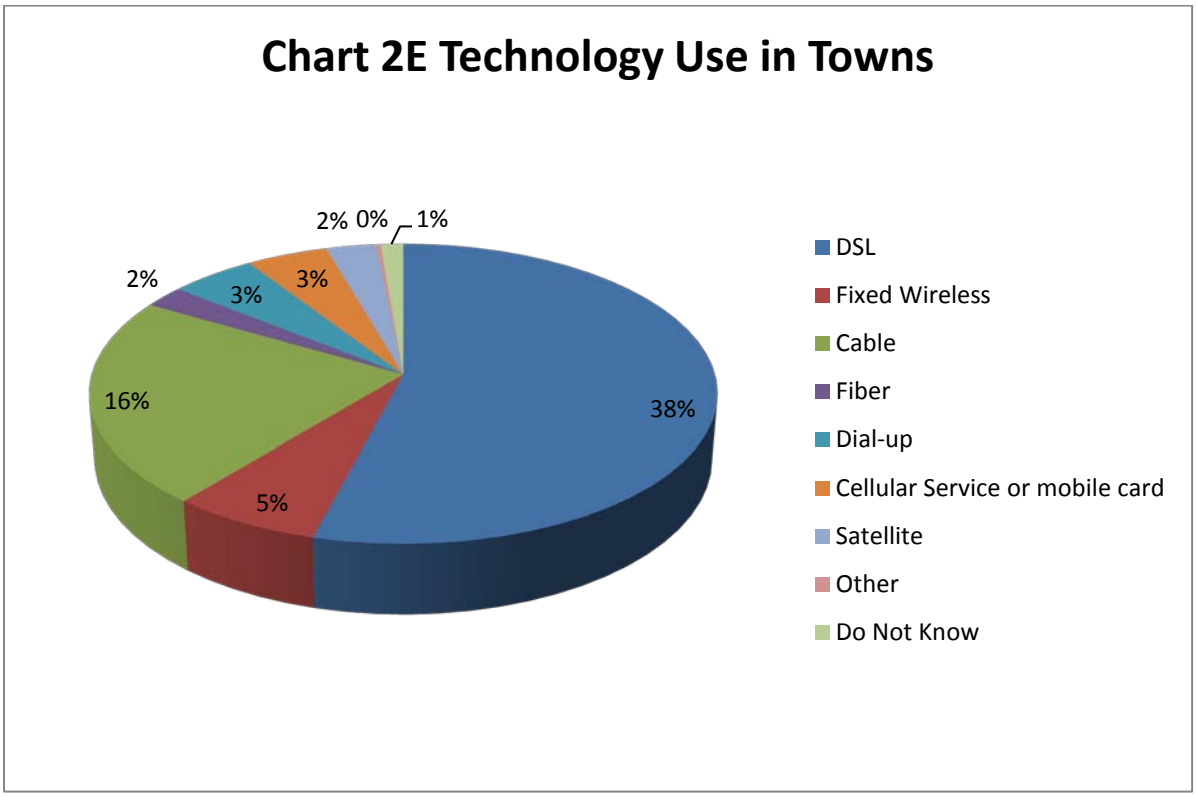
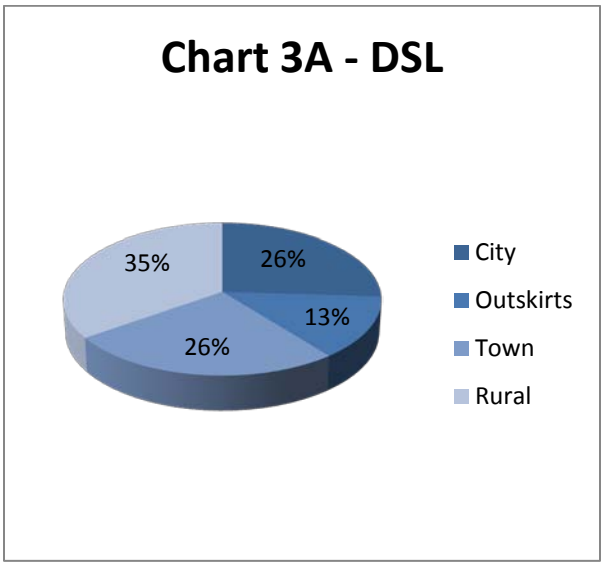
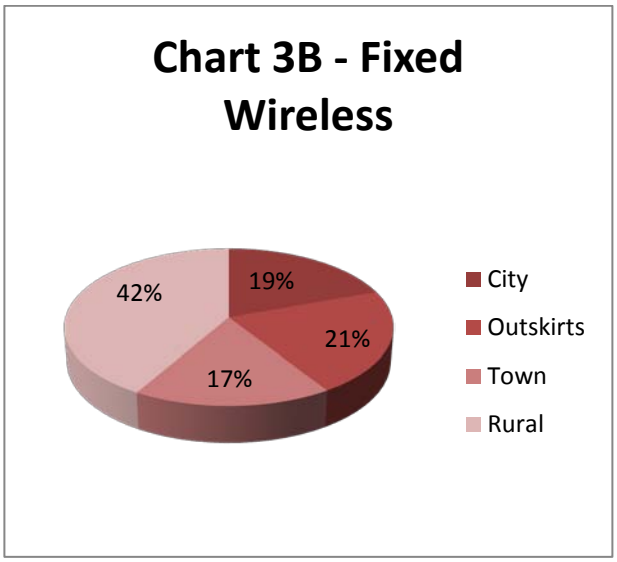
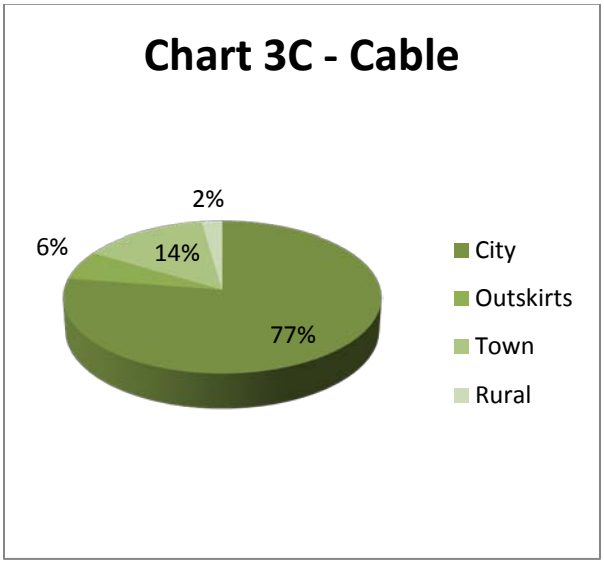


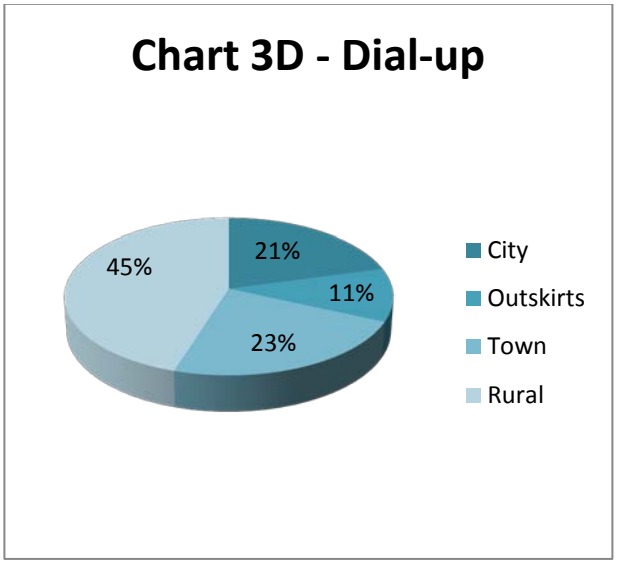
Chart 2E Technology Use in Towns
2%
0%
1%
2%
3%
3%
16%
38%
5%
DSL
Fixed Wireless
Cable
Fiber
Dial-up
Cellular Service or mobile card
Satellite
Other
Do Not Know

Another way to look at this question is to summarize the data by technology as in charts 3A-G.









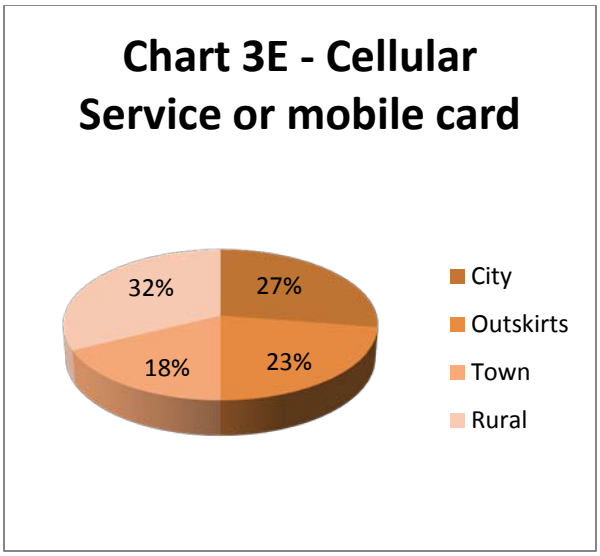


Chart 3E - Cellular Service or mobile card
32%
27%
18%
23%
City
Outskirts
Town
Rural

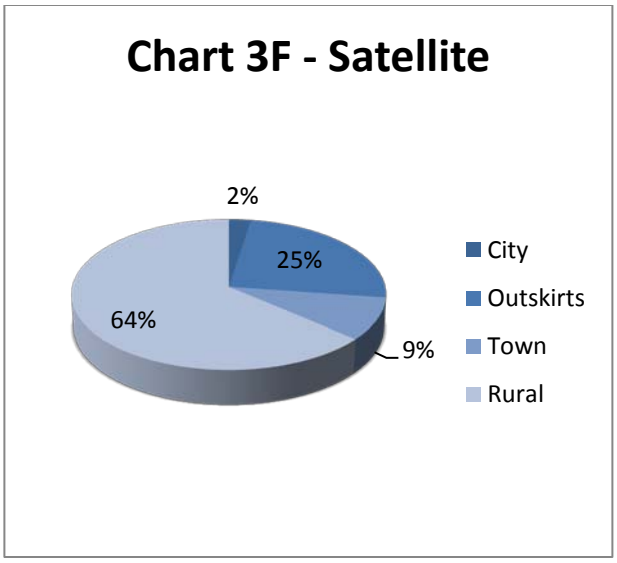


Chart 3F - Satellite
2%
25%
64%
9%
City
Outskirts
Town
Rural

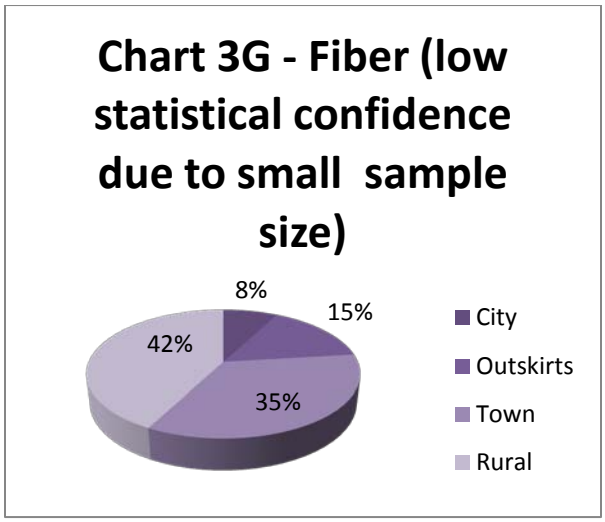


Chart 3G - Fiber (low statistical confidence due to small sample size)
8%
15%
42%
35%
City
Outskirts
Town
Rural

Satisfaction with Broadband Availability

Respondents were also asked questions about their satisfaction with broadband availability.

Which of the following statements best describes the current primary internet service at this home:

9% This home does not have an internet connection and I am not interested in getting one.

3% This home does not have an internet connection but I would like one. *(explain why you do not have an internet connection)*

- 58% wrote cost was the reason that they did not get an internet connection
- 9% wrote they do not have a computer.
- 7% wrote that available service costs too much for the speed offered.
- 6% wrote that service is not available at that location.
- 5% just have not taken the time to get it done.
- 5% wrote that the available speed is too slow.
- 3% do not have enough information to make a decision.
- 2% identified their home wiring or infrastructure as inadequate.

Sample size = 61, margin of error: ± 12.4% with 95% confidence.

3% There is a slow-speed internet connection at this home that I am satisfied with.

8% I would like a high speed broadband internet connection, but it is not available at this home.

9% There is an internet connection at this home that is too slow and I would like to upgrade to high speed broadband. *(explain why you have not upgraded)*

- 53% wrote that cost was the reason that they had not upgraded.
- 29% wrote that faster service was not available at that location.
- 6% wrote that they need more information before upgrading.
- 2% had not upgraded because of concerns about entering a new contract.
- 2% wrote a lack of competition prevented them from changing providers.

Sample size = 165, margin of error: ± 7.6% with 95% confidence.

53% There is a high speed broadband internet connection at this home that I am satisfied with.

13% There is a high speed broadband internet connection at this home that I am not happy with. *(explain why you are not satisfied with the current service)*

- 40% wrote that they were not satisfied because of the speed of their service.
- 19% were not satisfied because of the cost of their service.
- 16% were not satisfied with the reliability and quality of their service.
- 10% were dissatisfied with a combination of speed, reliability, and cost.
- 3% cited a lack of competition.

Sample size = 271, margin of error: ± 5.8% with 95% confidence.

<1% There is an internet connection here, but I do not have a computer.

Sample size = 2,134, margin of error: ± 2.1% with 95% confidence.

Overall satisfaction is presented in chart 4.

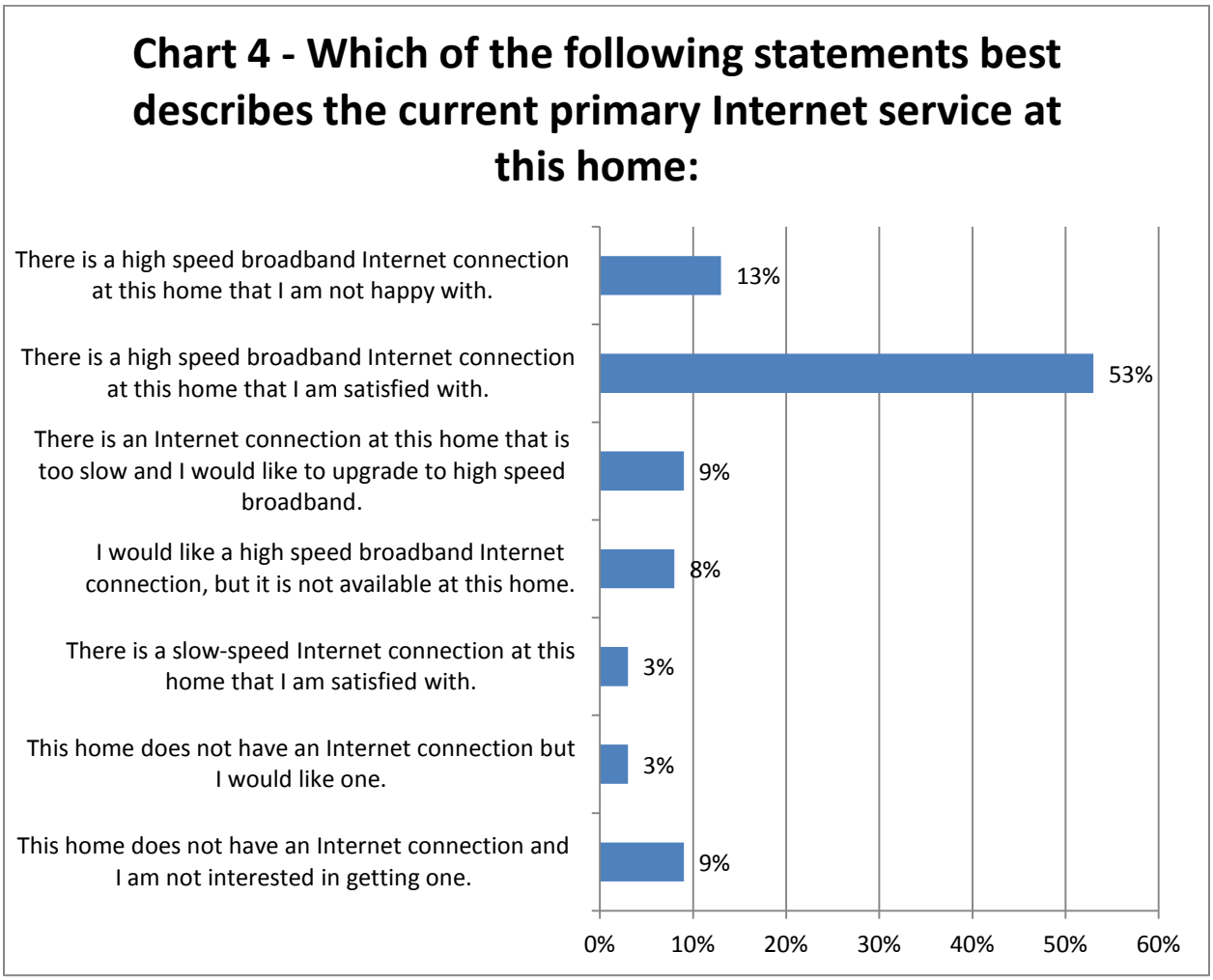


Chart 5 presents reasons respondents gave for not having a broadband connection.

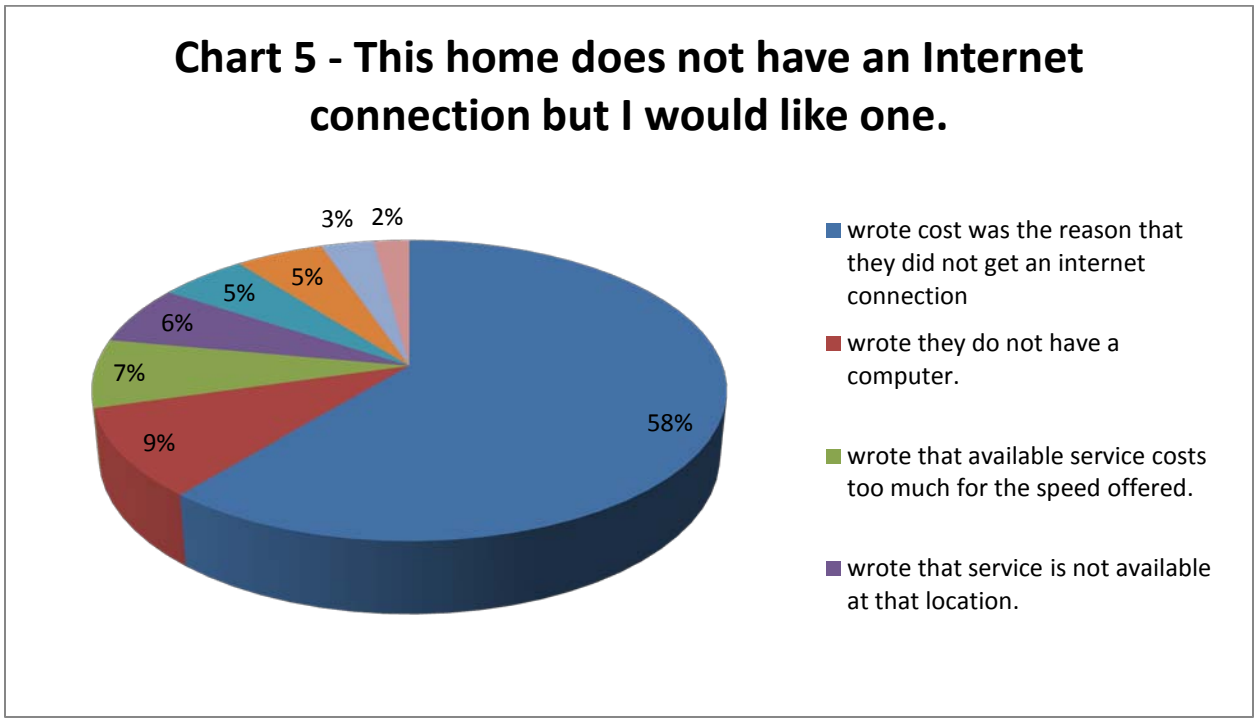


Chart 6 presents reasons why respondents have not upgraded to faster connections.

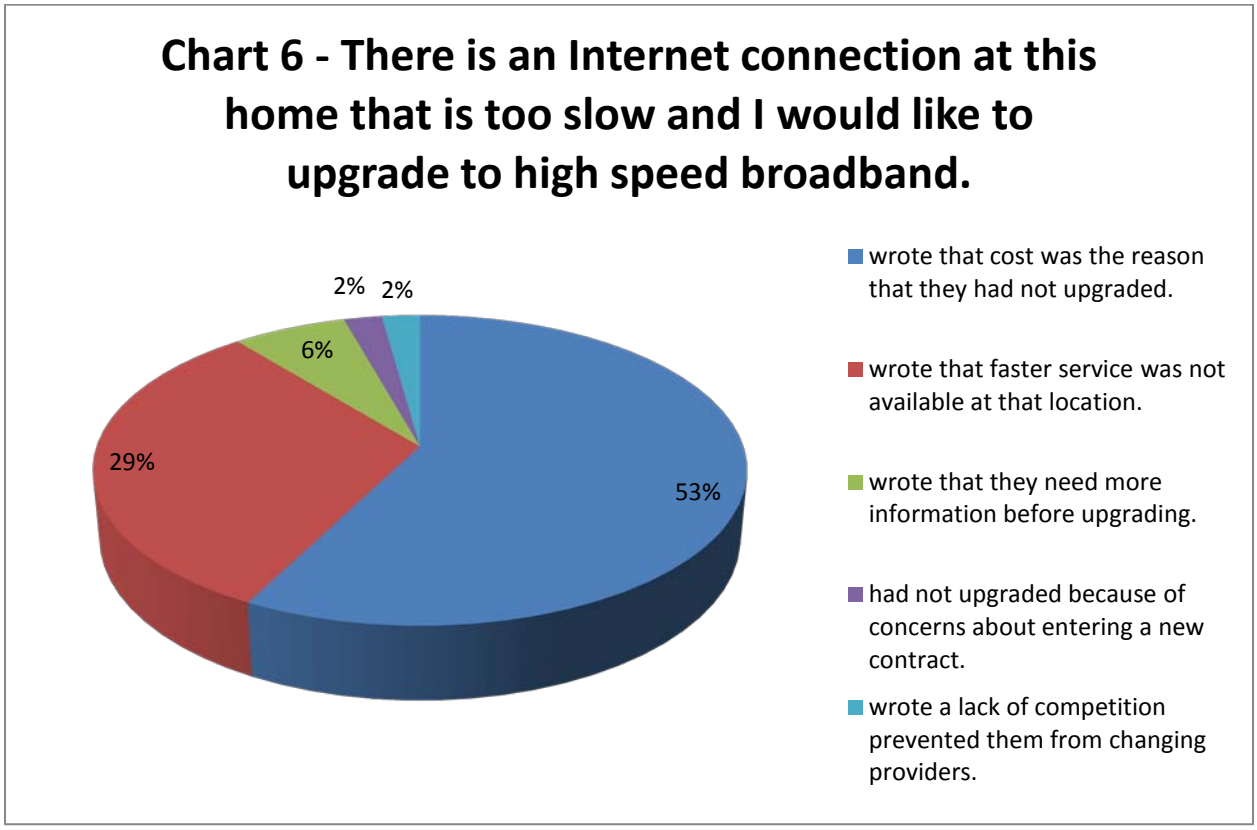
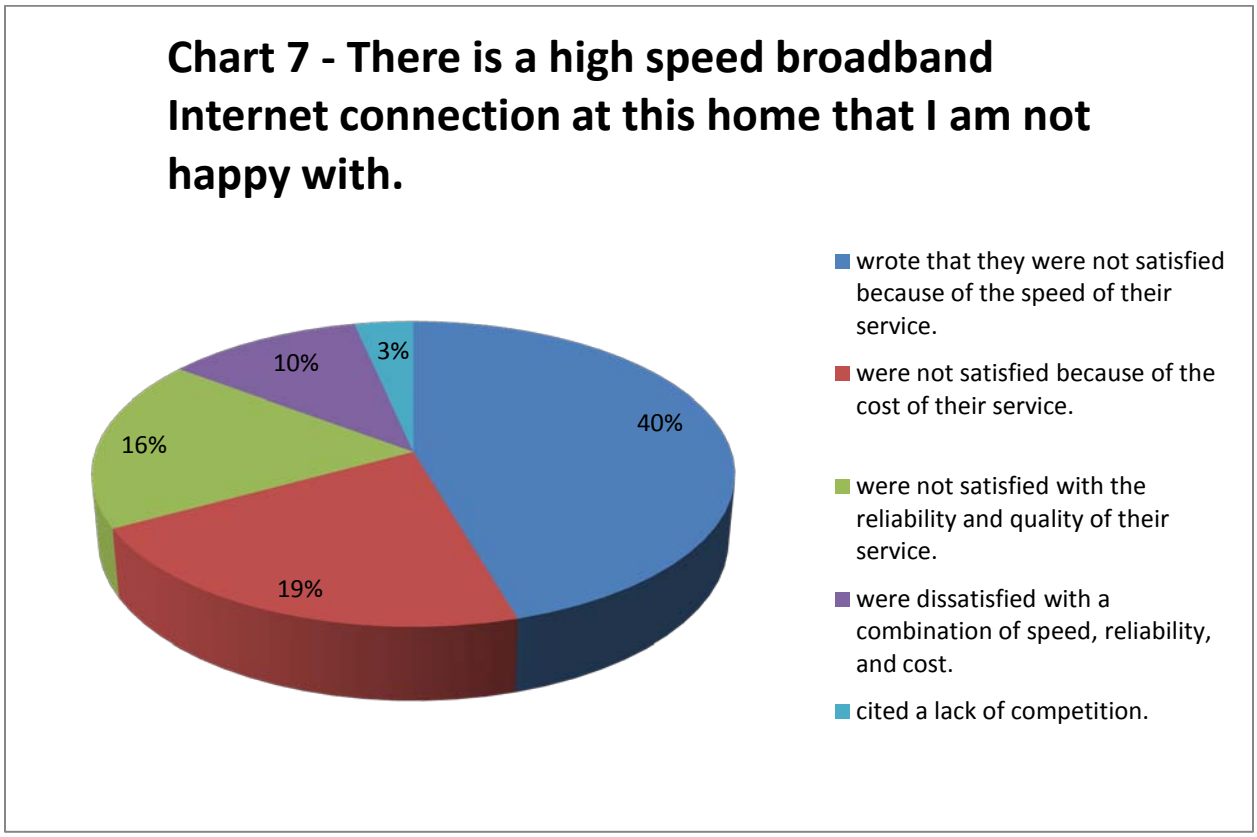
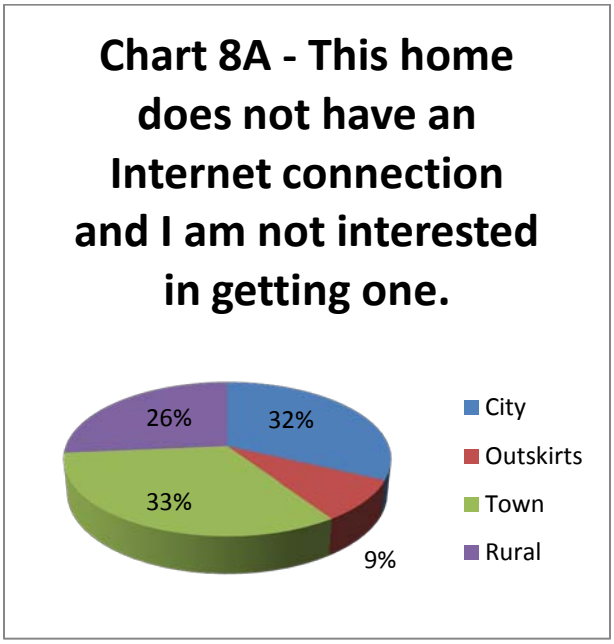


Chart 7 presents reasons users are not satisfied with their broadband service.



Charts 8A – H presents level of broadband satisfaction by urbanization type.



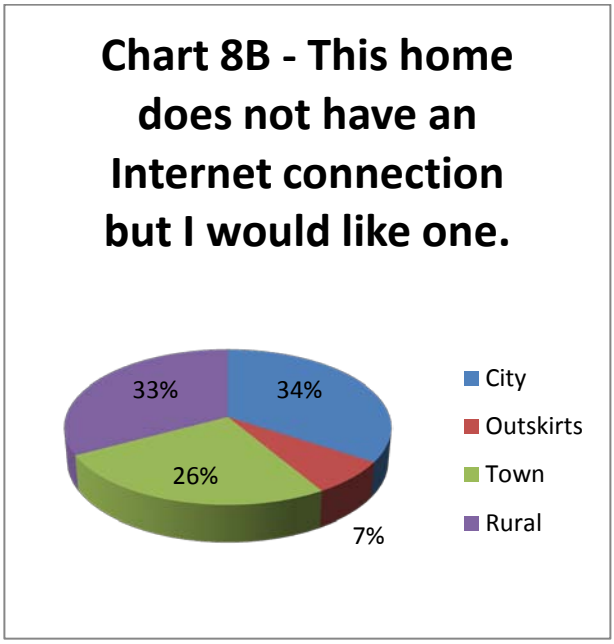


Chart 8C - There is a slow-speed Internet connection at this home that I am satisfied with.

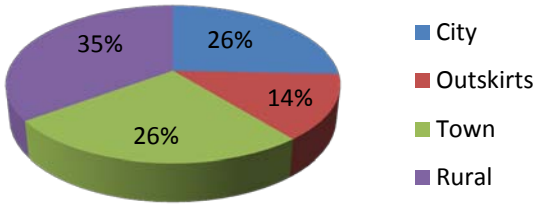


Chart 8D - I would like a high speed broadband Internet connection, but it is not available at this...

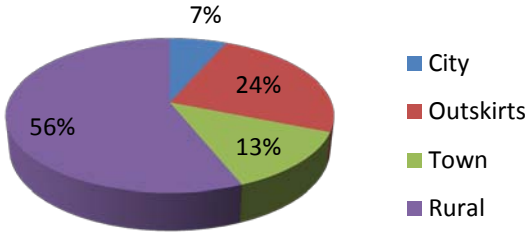


Chart 8E - There is an Internet connection at this home that is too slow and I would like to upgrade to high...

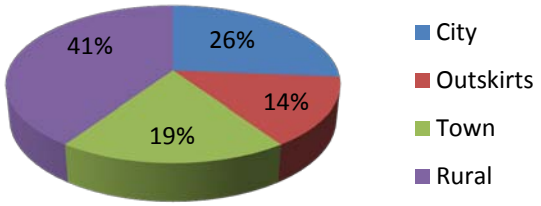
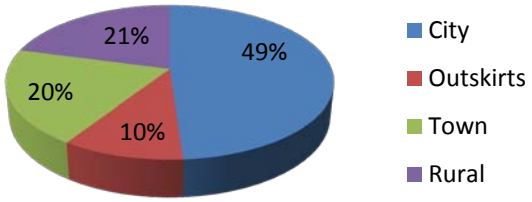
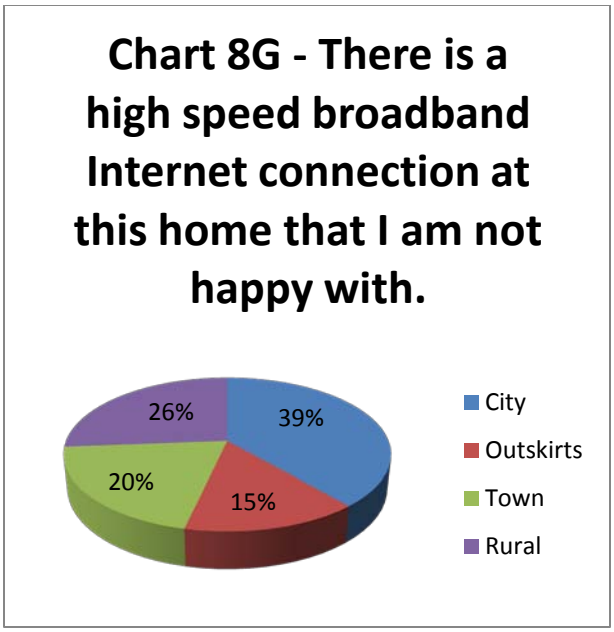


Chart 8F - There is a high speed broadband Internet connection at this home that I am satisfied with.





Satisfaction with Cellular Phone Reception

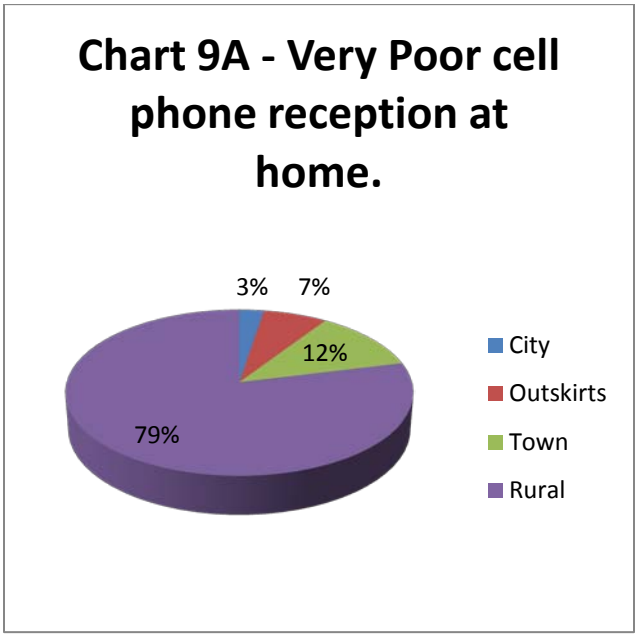
While the survey was focused on broadband issues there were also questions related to cellular phone reception.

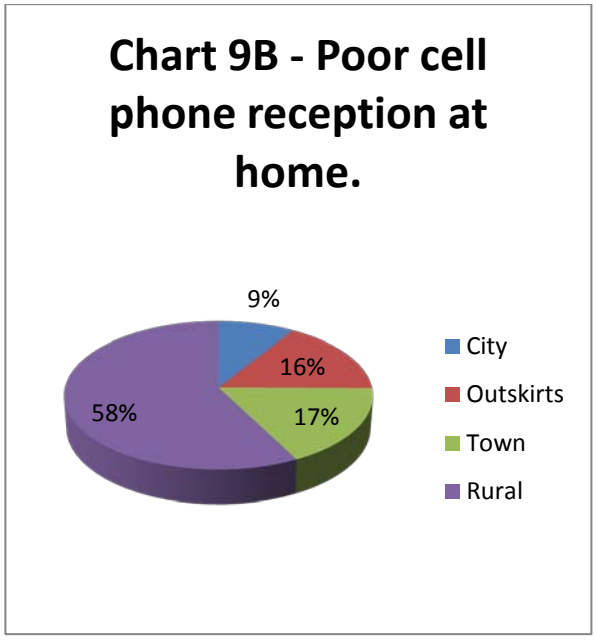
How would you rate the cellular telephone reception at this home location and while you travel in Montana?

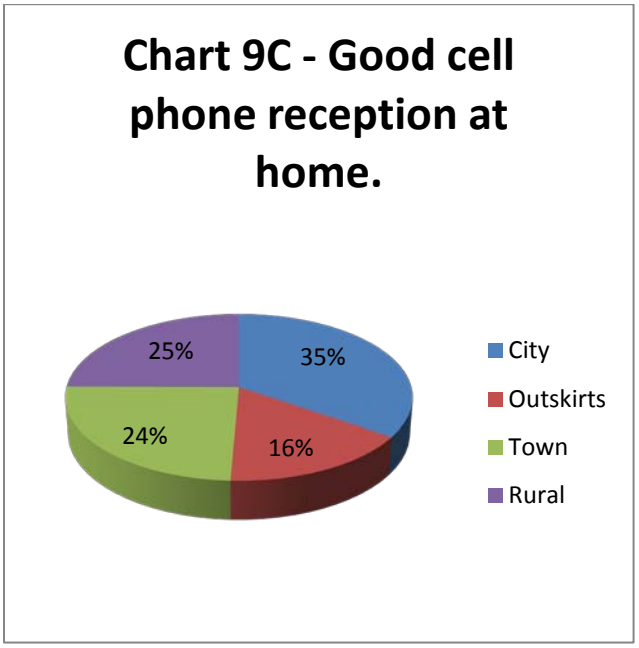
		Very Poor	Poor	Good	Very Good	No Opinion	
Cell phone reception at home	(%)	10	10	33	48	0	*n = 1,996*
Cell phone reception while traveling in Montana	(%)	7	27	47	18	2	*n = 1,913*

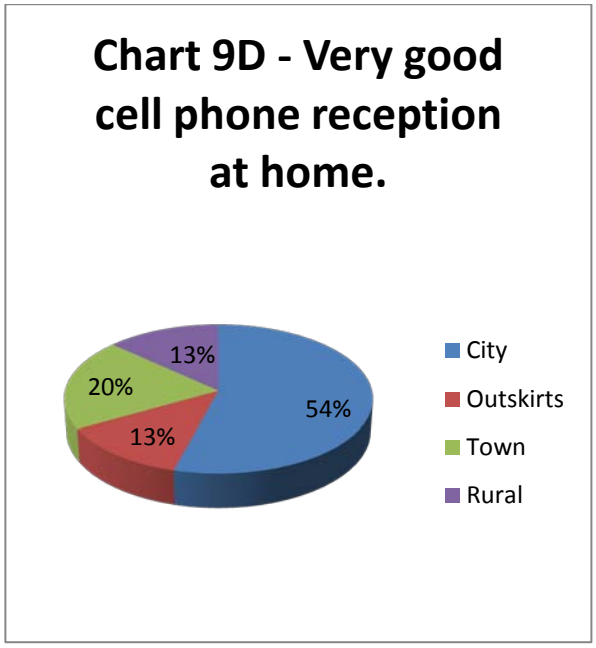
Margin of error for each item is no more than: ± 2.2% with 95% confidence.

Charts 9A – E present satisfaction with cell phone reception based on urbanization type.









Detailed Survey Results

This section provides basic survey response frequency distributions and statistical estimates of accuracy. The format follows the layout of the survey instruments. Results are presented first for the home survey and then for the business survey. The results for survey questions are presented in the original survey order (see appendix B for survey instrument examples). Results are typically presented as the percent distribution of responses across question response categories. Each set of survey question response estimates also includes an estimate of the margin of error at the 95% confidence level. For questions with more than two response categories, the margin of error is tighter for most of the items than the 'worst case' item's margin that is listed for the question.

Following the presentation of survey responses, appendix A provides a select list of some of the more interesting write-in comments that were received from questionnaire respondents.

Home Survey

Q1. Is there a working internet connection at the home where this survey was mailed?

87% Yes

13% No

Sample size = 2,286, margin of error: ± 1.4% with 95% confidence.

Of those who answered 'Yes' to Q1:

Q2. What is the primary (fastest or most reliable) internet service to this home?

4% Dial-up phone line - a slower 'landline' connection often provided by a telephone company. This type of connection produces a 'dial-tone' and 'connect-tone' when connecting the modem.

42% DSL phone line - Digital Subscriber Line, a higher speed landline connection often provided by a telephone company. This type of modem connection is 'always on.'

5% Cellular service or mobile card - a higher speed connection provided by your cell phone service, may be provided as a data package added to your existing cell phone service.

8% Fixed wireless - higher speed through an external receiver on your premises or an antenna connected to your computer.

6% Satellite - Higher speed connection from a satellite dish.

31% Cable - Higher speed connection often provided by a cable TV company, may be bundled with television and phone services.

1% Fiber - High speed fiber-optic connection. This is a dedicated circuit, typically used in businesses.

0% Other *(specify): Two reported using WIFI from an external source at their home.*

2% Do not know the type of internet connection at this home.

Sample size = 1,911, margin of error: ± 2.2% with 95% confidence.

Q3. What is the name of the company that provides this home's primary internet service?

Of those who answered 'Yes' to Q1:

Use	Internet Provider Name
31%	Bresnan Communications / Optimum
21%	CenturyLink
5%	Blackfoot Telephone Cooperative, Inc.
5%	Mid-Rivers Telephone Cooperative, Inc.
4%	Verizon Wireless
4%	Three Rivers Telephone Cooperative, Inc.
3%	Triangle Telephone Cooperative Association, Inc.
3%	Nemont Telephone Cooperative, Inc.
2%	Wildblue Communications, Inc.
2%	Montana Sky Networks
1%	AT&T Mobility LLC
1%	Montana Internet Corporation
1%	Don't know

Sample size = 1,916, margin of error: ± 2.1 % with 95% confidence.

Q3 Provider List *continued...*

Use	Internet Provider Name		
Providers mentioned by < 1% :		**Other Providers mentioned:**	
0.9%	WispWest.net	0.1%	Traceworks, LLC
0.9%	Bridge Maxx	0.1%	Windjammer Communications LLC
0.8%	Range Telephone Cooperative, Inc.	0.1%	Global Net, Inc.
0.8%	Little Apple Technology	0.1%	East Slope
0.8%	Frontier Communications of Montana	0.1%	Oki Communications LLC
0.7%	USA Digital	0.1%	Linctel
0.7%	Interbel Telephone Cooperative, Inc.	0.1%	Integra Telecom Holdings, Inc.
0.5%	Hughes Communications, Inc.	0.1%	Rural Broadband
0.5%	TCT West	0.1%	Lightnex Communications, Inc.
0.5%	Earthlink	0.1%	Netgear
0.5%	AOL	0.1%	Three Forks Cable T.V.
0.4%	Dish Network	0.1%	Direct TV
0.4%	Cybernet1	0.1%	Landmark Electronics
0.4%	RFWave	0.1%	Ameriocon
0.4%	Cutthroat Communications, Inc.	0.1%	The Computer Guy of Montana
0.4%	Ronan Telephone Company	0.1%	Compuplus
0.4%	Lincoln Telephone Company, Inc.	0.1%	Big Sky Net
0.4%	Centric	0.1%	SKC wireless
0.3%	Rocky Mountain Internet	0.1%	Kootenai Valley Internet Service
0.3%	Northern Telephone Cooperative, Inc.	0.1%	Blue Sky
0.3%	Hot Springs Telephone Company	0.1%	Toast.net
0.3%	People PC	0.1%	Visionary
0.3%	Internet Montana	0.1%	Mindspring. com
0.2%	Net Zero	0.1%	Clark Fork Wireless
0.2%	Montana Opticom	0.1%	Sitestar
0.2%	MSN	0.1%	Teleservices system
0.2%	Digital Bridge	0.1%	Stellar Computing
0.2%	Access Montana	0.1%	Grizzly Internet, Inc.
0.2%	Juno	0.1%	Montana Web
0.2%	Montana Digital	0.0%	Starband
0.2%	Central MT. Com	0.0%	Bridger Cable
0.2%	Southern Montana Telephone Company	0.0%	Softworx
0.2%	Bridgeband Communications, Inc.	0.0%	Sheridan Electric
0.2%	Western Montana Community Telephone	0.0%	Cable Montana
		0.0%	VisionNet
		0.0%	Sky Blue
		0.0%	Lewistown On-Line
		0.0%	Teton Wireless

Sample size = 1,916

Q4. Which of the following statements best describes the current primary internet service at this home:

9% This home does not have an internet connection and I am not interested in getting one.

3% This home does not have an internet connection but I would like one. *(explain why you do not have an internet connection)*

- 58% wrote cost was the reason that they did not get an internet connection
- 9% wrote they do not have a computer.
- 7% wrote that available service costs too much for the speed offered.
- 6% wrote that service is not available at that location.
- 5% just have not taken the time to get it done.
- 5% wrote that the available speed is too slow.
- 3% do not have enough information to make a decision.
- 2% identified their home wiring or infrastructure as inadequate.

Sample size = 61, margin of error: ± 12.4% with 95% confidence.

3% There is a slow-speed internet connection at this home that I am satisfied with.

8% I would like a high speed broadband internet connection, but it is not available at this home.

9% There is an internet connection at this home that is too slow and I would like to upgrade to high speed broadband. *(explain why you have not upgraded)*

- 53% wrote that cost was the reason that they had not upgraded.
- 29% wrote that faster service was not available at that location.
- 6% wrote that they need more information before upgrading.
- 2% had not upgraded because of concerns about entering a new contract.
- 2% wrote a lack of competition prevented them from changing providers.

Sample size = 165, margin of error: ± 7.6% with 95% confidence.

53% There is a high speed broadband internet connection at this home that I am satisfied with.

13% There is a high speed broadband internet connection at this home that I am not happy with. *(explain why you are not satisfied with the current service)*

- 40% wrote that they were not satisfied because of the speed of their service.
- 19% were not satisfied because of the cost of their service.
- 16% were not satisfied with the reliability and quality of their service.
- 10% were dissatisfied with a combination of speed, reliability, and cost.
- 3% cited a lack of competition.

Sample size = 271, margin of error: ± 5.8% with 95% confidence.

<1% There is an internet connection here, but I do not have a computer.

Sample size = 2,134, margin of error: ± 2.1% with 95% confidence.

Home internet Use:

Q5. How often does anyone in this household use the home internet for the following tasks?

Of those who indicated in Q4 that they have an internet connection, items are rank ordered by frequency:

Activity Frequency:		Several times a day	About once a day	At least once a week	Less often	Never	
Email	(%)	49	33	12	5	1	*n = 1,934*
Search for information	(%)	33	30	28	8	1	*n = 1,921*
Read current news, weather, events	(%)	30	37	18	11	4	*n = 1,918*
Social networking	(%)	19	20	15	14	32	*n = 1,884*
Home-based business	(%)	13	7	8	9	64	*n = 1,895*
Telecommute to work	(%)	6	3	6	9	76	*n = 1,882*
Pay bills, online banking	(%)	5	11	38	20	26	*n = 1,891*
Watch online movies, videos, programs	(%)	5	8	14	27	47	*n = 1,893*
Shopping, eBay	(%)	3	6	23	50	17	*n = 1,884*
Online training, education courses	(%)	3	6	10	32	49	*n = 1,916*
Check student grades, homework	(%)	3	5	11	12	69	*n = 1,886*
Voice calls over Internet (e.g., Skype)	(%)	3	3	10	19	65	*n = 1,882*
Search for medical information	(%)	2	5	20	58	16	*n = 1,933*
Mapping, Google Earth	(%)	2	5	19	59	14	*n = 1,872*
Search for a job	(%)	2	4	6	23	65	*n = 1,893*
Use government information services	(%)	1	2	12	59	25	*n = 1,902*
Tax related research, filing, payment	(%)	1	1	6	52	39	*n = 1,918*
Request permits and licenses	(%)	1	1	4	48	46	*n = 1,900*
Communicate with health provider	(%)	0	0	2	17	81	*n = 1,912*
Online doctor appointment	(%)	0	0	1	13	85	*n = 1,911*

Margin of error for each item is no more than: ± 2.3% with 95% confidence.

Home internet Performance:

Q6. How would you rate the overall performance of each of the following aspects of your current household internet service?

Of those who indicated in Q4 that they have an internet connection, items are rank ordered by rating:

Performance rating:	Very poor	Poor	Good	Very good	No opinion	
Reliability	3	10	1	51	35	*n = 1,919*
Customer service	4	11	9	48	28	*n = 1,920*
Cost	9	30	4	45	12	*n = 1,919*
Speed	4	15	51	30	1	*n = 1,939*
Choice of providers	23	25	12	29	11	*n = 1,917*

Margin of error for each item is no more than: ± 2.2% with 95% confidence

Household Use of Other Technology:

Q7. Do you have a home-based business at this location?

32% Yes → 63% Part-time 37% Full-time *Sample size = 684*

margin of error: ± 3.6% with 95% confidence.

68% No

Sample size = 2,222, margin of error: ± 1.9% with 95% confidence.

Q8.Does anyone in this household use the internet at a public library?

10% Yes

90% No

Sample size = 2,216, margin of error: ± 1.3% with 95% confidence.

Q9. If someone in this household uses the internet at a public library, please explain why that service is used rather than a home internet computer connection.

Of those who said Yes to Q8, reasons are rank ordered:

Reason for Library Internet Use	
Convenience, supplemental service	39%
Better service than home	20%
Access is not available at home	20%
Kids use library / school work	11%
Use library's information resources	9%
Telecommute	<1%
Social events	<1%

Sample size = 199

Margin of error: ± 6.8% with 95% confidence.

Household Cellular Telephone Use:

Q10. Does anyone in this household use a cellular telephone?

90% Yes → Name of provider:

Providers are rank ordered, sample size = 1,916 margin of error: ± 2.1% with 95% confidence.

Cellular Telephone Provider	
Verizon	68%
AT&T	16%
Tracfone	6%
Cellular One	3%
Nemont Telephone	2%
Midrivers	1%
Straight Talk	1%
Net 10	1%
Wallmart	<1%
Jitterbug	<1%
Centruylink	<1%
Qwest	<1%
Sprint	<1%
Sagebrush	<1%
Bresnan	<1%
Global Wireless	<1%
Trek	<1%
Virginia	<1%
Pennsylvania St. Co.	<1%
Century Tel	<1%
Ronan Telephone	<1%
T-Mobile	<1%
Globalstar Satallite phone	<1%

10% No

Sample size = 2,256 margin of error: ± 1.2% with 95% confidence.

Q11. Do you get usable cellular telephone reception at this home?

Of those who answered Yes to Q10, if they use a cell phone:

88% Yes, there is cell phone reception

12% No, there is little or no cell reception at this home location

Sample size = 2,028, margin of error: ± 1.4% with 95% confidence.

Q12. How would you rate the cellular telephone reception at this home location and while you travel in Montana?

Of those who answered Yes to Q10, if they use a cell phone:

		Very Poor	Poor	Good	Very Good	No Opinion	
Cell phone reception at home	(%)	10	10	33	48	0	*n = 1,996*
Cell phone reception while traveling in Montana	(%)	7	27	47	18	2	*n = 1,913*

Margin of error for each item is no more than: ± 2.2% with 95% confidence.

Q13. What was the primary reason you first purchased a cellular telephone?

Of those who answered Yes to Q10, if they use a cell phone:

Reason for getting a cellualar phone:	
Travel	32%
Emergency assistance	21%
Primary home phone	16%
Work/Business	13%
Convenience	8%
To stay in touch with family members	4%
Emergency & Travel	3%
For long distance calling	1%
All of the above	1%
Provided by work	1%
Add for family member	<1%
Add / paid by family member	<1%
Data / Text / Internet	<1%

Sample size = 2,003, margin of error: ± 2.0% with 95% confidence.

Q14. Does anyone in this household use a smart phone with a data plan for email and other applications?

Of those who answered Yes to Q10, if they use a cell phone:

36% Yes, household member(s) use a smart phone and data plan

64% No, this household only uses basic cellular telephone service

Sample size = 2,010, margin of error: ± 2.1% with 95% confidence.

Household Characteristics:

Q15. How would you describe this household?

18% Single person

81% Couple, family

1% Friends, unrelated roommates

Sample size = 2,254, margin of error: ± 1.6% with 95% confidence.

Q16. Are there children living in this household? *(percent of all households):*

a. Younger than 13 years old: 17%

b. Between 13 and 17 years old: 14%

Sample size = 2,326, margin of error: ± 1.5% with 95% confidence.

Business Survey

Business internet Service:

Q1. Is there a working internet connection at the business location where this survey was mailed?

89% Yes

11% No

Sample size = 341, margin of error: ± 3.3% with 95% confidence.

Q2. What is the primary (fastest or most reliable) internet service at this business location?

Of those who answered 'Yes' to Q1:

1% Dial-up phone line - a slower 'landline' connection often provided by a telephone company. This type of connection produces a 'dial-tone' and 'connect-tone' when connecting the modem.

48% DSL phone line - Digital Subscriber Line, a higher speed landline connection often provided by a telephone company. This type of modem connection is 'always on.'

2% Cellular service or mobile card - a higher speed connection provided by your cell phone service, may be provided as a data package added to your existing cell phone service.

8% Fixed wireless - higher speed through an external receiver on your premises or an antenna connected to your computer.

5% Satellite - Higher speed connection from a satellite dish.

17% Cable - Higher speed connection often provided by a cable TV company, may be bundled with television and phone services.

6% Fiber - High speed fiber-optic connection. This is a dedicated circuit, typically used in businesses.

10% T1 - High speed dedicated copper wire.

2% Other *(specify): others mentioned by one each included EFM, wireless radio, and RF antenna.*

Sample size = 264, margin of error: ± 6.0% with 95% confidence.

Of those who answered 'Yes' to Q1, providers are rank ordered by use:

Q3. What is the name of the company that provides this business's primary internet service?

Use	Internet Provider Name
18%	Bresnan Communications
12%	CenturyLink
11%	Qwest
5%	Mid-Rivers Telephone Cooperative, Inc.
5%	Triangle Telephone Cooperative Association, Inc.
5%	Blackfoot Telephone Cooperative, Inc.
5%	Three Rivers Telephone Cooperative, Inc.
3%	Nemont Telephone Cooperative, Inc.
3%	Cutthroat Communications, Inc.
2%	Montana Sky Networks
2%	Integra Telecom Holdings, Inc.
2%	Montana Internet Corporation
1%	Verizon Wireless
1%	Montana Opticom
8%	Don't know
Providers mentioned by < 1% :	
0.8%	AT&T Mobility LLC
0.8%	RF Wave
0.8%	WispWest.net
0.8%	Wildblue Communications, Inc.
0.8%	Frontier Communications of Montana
0.8%	Global Net, Inc.
0.8%	Centurytel net.
0.8%	Cybernet1
0.8%	Range Telephone Cooperative, Inc.
0.8%	Hughes Communications, Inc.
0.8%	Centric
0.8%	Digital Bridge Communications Corp.
0.4%	Bridgeband Communications, Inc.
0.4%	Landmark Electronics
0.4%	Telesys Service
0.4%	Viking Broadband
0.4%	US Communications
0.4%	Windjammer Communications LLC
0.4%	Northern Telephone Cooperative, Inc.
0.4%	Clear Fly
0.4%	SISNA
0.4%	Linkeys
0.4%	Comcast
0.4%	Visionary
0.4%	VisionNet
0.4%	Stellar Computing
0.4%	USA Digital

Sample size = 150, margin of error: ± 6.1% with 95% confidence.

Q4. Which of the following statements best describes the current primary internet service at this business location?

10% This business does not have an internet connection and I am not interested in getting one.

1% This business location does not have an internet connection but I would like one. *(explain why you do not have an internet connection):*

- 1 business cited cost as the reason for not getting a connection.

3% There is a slow-speed internet connection at this business location that I am satisfied with.

5% I would like a high speed broadband internet connection, but it is not available at this business location.

7% There is an internet connection at this business location that is too slow and I would like to upgrade to high speed broadband. *(explain why you have not upgraded):*

45% cited a combination of available speed and cost of upgrade.

40% said an upgrade was not available.

10% cited new contract concerns

Sample size = 20

62% There is a high speed broadband internet connection at this business location that I am satisfied with.

11% There is a high speed broadband internet connection at this business location that I am not happy with. *(explain why you are not satisfied with the current service)*

38% indicated that speed was the reason for their dissatisfaction.

16% cited connection reliability and quality.

15% cited a combination of speed, quality, and cost.

Sample size = 32

0% There is an internet connection here, but I do not have a computer.

Sample size = 321, margin of error: ± 5.3% with 95% confidence.

Business internet Use:

Q5. How often does anyone at this business location conduct the following internet tasks for business purposes?

Of those that indicated in Q4 that they have an internet connection, items are rank ordered by use:

		More than once per day	About once a day	At least once a week	Less often	Never	
Email	(%)	75	12	8	3	2	*n = 266*
Search for information	(%)	62	19	12	4	3	*n = 262*
Respond to information requests	(%)	33	14	15	20	18	*n = 264*
Provide online customer service	(%)	24	7	12	15	42	*n = 262*
Social Network (Facebook, Twitter)	(%)	15	14	13	14	45	*n = 265*
Pay bills, online banking	(%)	14	15	22	20	30	*n = 264*
Mapping, Google Earth	(%)	14	11	22	38	15	*n = 264*
Order supplies, equipment	(%)	13	12	35	29	10	*n = 265*
Use government information services	(%)	12	9	17	42	20	*n = 266*
File sharing (Dropbox, Google Docs)	(%)	11	4	6	20	59	*n = 265*
Fill orders, sell products online	(%)	11	3	4	14	69	*n = 261*
Watch Video (e.g., You Tube)	(%)	10	8	16	31	35	*n = 266*
Online training, education courses	(%)	8	8	15	50	20	*n = 256*
Tax related research, filing, payment	(%)	7	5	13	34	41	*n = 264*
Voice calls over internet (e.g., Skype)	(%)	6	2	4	14	73	*n = 263*
Request government permits or licenses	(%)	3	4	7	45	41	*n = 261*

Margin of error for each item is no more than: ± 6.1% with 95% confidence.

Business internet Performance:

Q6. How would you rate the overall performance of each of the following aspects of your current business internet service?

Of those that indicated in Q4 that they have an internet connection, items are rank ordered by performance:

		Very Poor	Poor	Good	Very Good	No Opinion	
Cost	(%)	4	15	10	53	18	*n = 266*
Customer service	(%)	5	9	8	48	30	*n = 268*
Speed	(%)	3	11	1	48	38	*n = 269*
Reliability	(%)	2	7	1	44	45	*n = 268*
Choice of providers	(%)	14	21	15	33	16	*n = 266*

Margin of error for each item is no more than: ± 6.0% with 95% confidence.

Q7. How would you rate the importance of the following potential improvements to Montana's broadband infrastructure?

All respondents, items are rank ordered by importance:

		Importance					
		Slight		Moderate		High	
Lower the cost of broadband services	(%)	7	4	16	23	50	*n = 273*
Expand Montana business markets	(%)	8	8	22	23	40	*n = 273*
Increase the availability of broadband	(%)	11	5	23	25	36	*n = 275*
Help businesses with cyber-security	(%)	9	9	21	26	35	*n = 270*
Enhance the state's attractiveness to new businesses	(%)	10	6	30	19	35	*n = 272*
Enhance fire, medical, and law enforcement emergency response	(%)	13	7	28	21	31	*n = 271*
Promote entrepreneurship	(%)	11	8	28	21	31	*n = 271*
Improve telecommuting and home business opportunities	(%)	17	13	29	20	22	*n = 272*
Improve agricultural efficiency	(%)	15	8	34	23	20	*n = 271*
Increase telemedicine applications	(%)	14	15	32	21	19	*n = 268*
Improve government online services	(%)	18	11	32	20	19	*n = 273*
Expand online training opportunities	(%)	18	18	37	16	12	*n = 271*

Margin of error for each item is no more than: ± 6.0% with 95% confidence.

Business Cellular Telephone Use:

Q8. Do any employees of this business use a cellular telephone provided by the business?

55% Yes → Name of provider:

Providers are rank ordered, sample size = 157

Cellular Telephone Provider	
Verizon Wireless	71%
AT&T Mobility LLC	18%
Nemont Telephone Cooperative, Inc.	4%
Mid-Rivers Telephone Cooperative, Inc	2%
Cellular One	2%
Straighttalk	1%
Sagebrush	1%
Sprint Nextel Corporation	1%
Century Link	1%

Sample size = 157, margin of error: ± 7.1% with 95% confidence.

45% No

Sample size = 326, margin of error: ± 5.4% with 95% confidence.

Q9. Does anyone in this business use a smart phone with a data plan for email and other applications provided by the business

Of those who answered Yes to Q8:

56% Yes, one or more employees use a smart phone and data plan.

44% No, this business only uses basic cellular phone service.

Sample size = 179, margin of error: ± 7.3% with 95% confidence.

Q10. How would you rate the cellular telephone reception at this business location and while you travel in Montana?

Of those who answered Yes to Q8:

		Very Poor	Poor	Good	Very Good	No Opinion	
a. Cell phone reception at this business	(%)	9	12	32	47	1	*n = 164*
b. Cell phone reception while traveling in Montana	(%)	6	35	51	7	1	*n = 156*

Margin of error for each item is no more than: ± 7.8% with 95% confidence.

Business Characteristics:

Q11. Is this a business that is located in a home?

22% Yes

78% No

Sample size = 295, margin of error: ± 4.7% with 95% confidence.

Q12. If you have a home-based business at this location, is it a part-time or full-time business?

Of those who answered Yes to Q11:

26% Part-time

74% Full-time

Sample size 62, margin of error: ± 10.9% with 95% confidence.

Q13. How many people work at this business location, and how many of them use computers as part of their job?

Total number of employees: 80% have 13 or fewer employees

Mean number of employees: 12 (std dev = 21, three outliers trimmed at 100)

Total number of computer users: 80% have 10 or fewer computer users

Mean number of computer users: 8 (std dev = 17, three outliers trimmed at 100)

Sample size = 325

Q14. Type of business at this location: *(all that apply)*

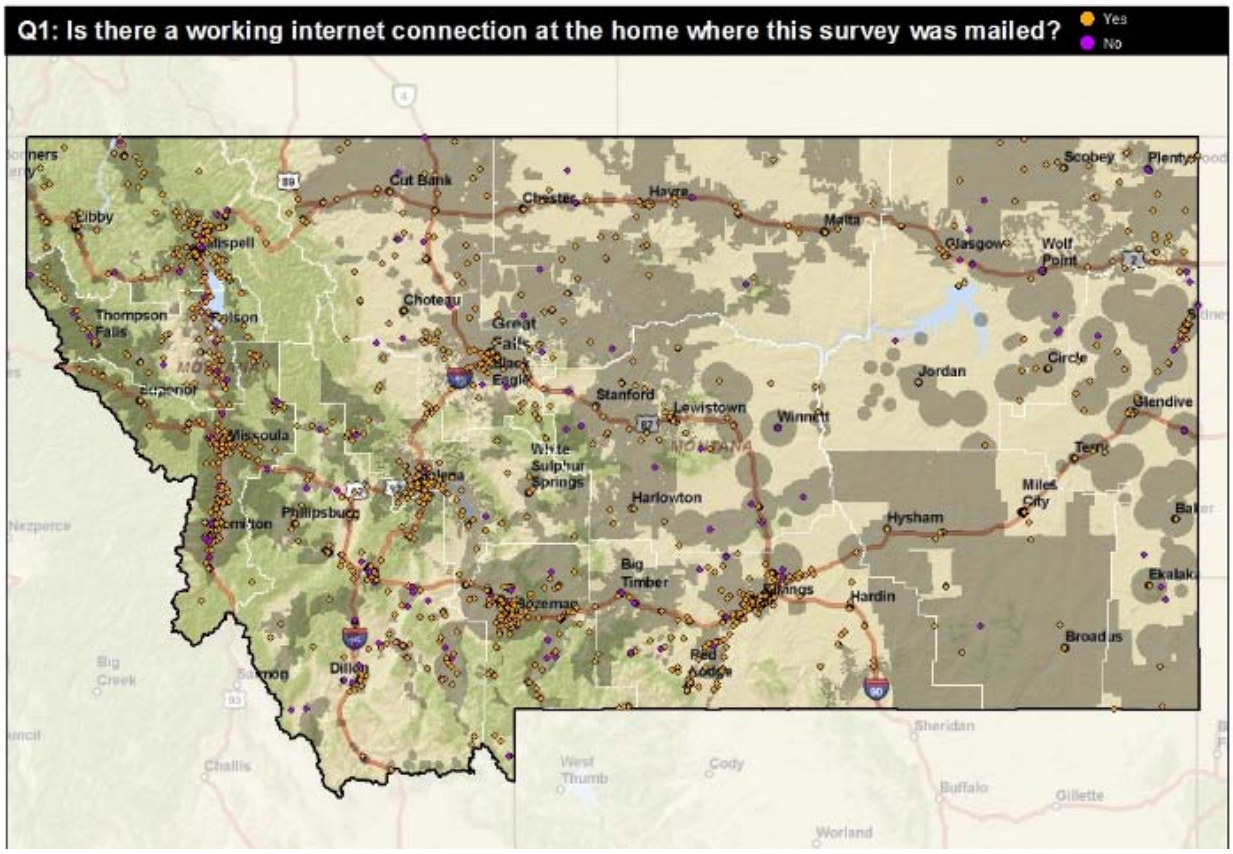
Type of Business	
Retail	20%
Service	13%
Government	10%
Non-profit	10%
Medical (health care)	7%
Technology	5%
Education (Primary & Secondary)	3%
Business and Economic Development	3%
Construction	3%
Finance/Insurance/accounting	3%
Real Estate	2%
Wholesale	2%
Entertanment / restaurant/bar	2%
Rental property, prop mngt	2%
Law Firm	1%
Transportation	1%
Recreation	1%
Higher education	1%
Manufacturing	1%
Research/Laboratory	1%
Lodging	1%
Contractor	1%
Media	1%
Bank	<1%
Library	<1%
Radio Station	<1%
Logging	<1%
Construction	<1%
ISP	<1%

Sample size = 344, margin of error: ± 4.2% with 95% confidence.

Comparison to Broadband Map Coverage

The residential and business survey responses were examined and the location of those who were surveyed compared to the mapped broadband coverage as of the Fall, 2011 NTIA submittal. A total of 103 or 6.7% of the residential respondents and 16 or 4.7% of the business respondents were found who indicated they had wired or fixed wireless type internet and were located outside of a mapped coverage. This included those that said they had DSL, cellular service or mobile card, fixed wireless or cable technologies of transmission. This indicates a reasonably valid broadband map in terms of minimal errors of omission.

The residential map below shows the survey samples overlaid on existing mapped coverage of broadband for all wired and fixed wireless coverage. The scale of the map does not allow individual survey locations in urban areas to be seen.

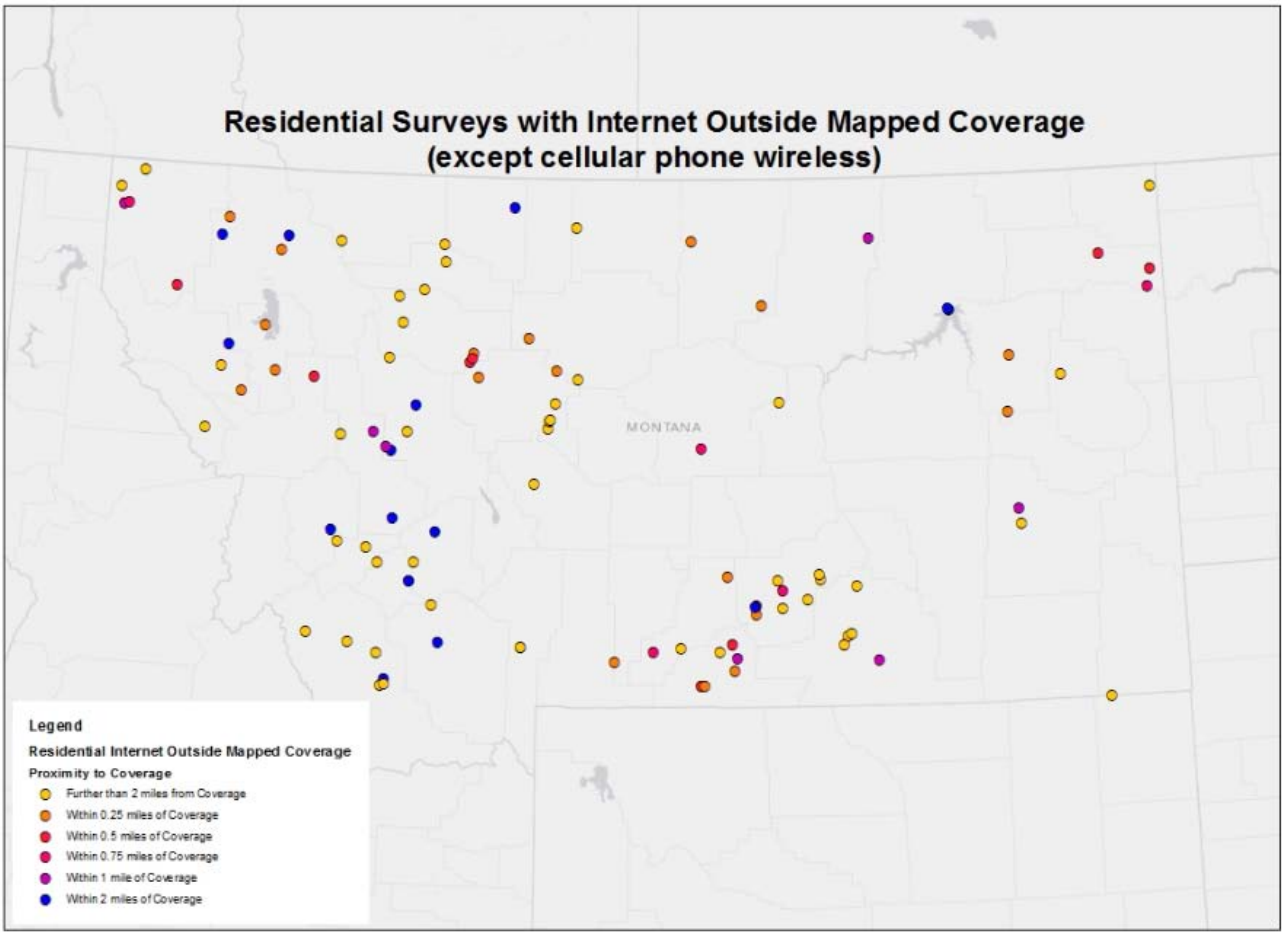


Taking the analysis a step further to compare broadband providers described by respondents to mapped coverage of broadband was more difficult to assess. There was a wide variety in response by both residential and business respondents on the name of the company that provides their internet service. Presently, after almost two years and four mapping cycles, 57 providers have been identified in Montana that meets the NTIA definition of a broadband service provider. A total of 87 providers were listed in the residential survey responses and some of the actual providers were not listed by respondents.

Some respondents listed router and other equipment manufacturers such as Linksys and Netgear, others listed retail resellers of broadband service providers who do not meet minimum standards. One of the

objectives of the survey was to compare survey results to the Montana broadband mapping project results. In order to make a direct comparison of survey responses to mapped coverage by providers, we conducted two separate geospatial operations. Most cities and larger towns in Montana have multiple providers and many rural areas have only one provider. First we spatially overlaid the responses on aggregated and dissolved broadband GIS coverage maps for those areas where there was only one unique provider of DSL, cellular service or mobile card, fixed wireless or cable technologies of transmission. We subsequently assigned that unique provider to the respondent, and standardized the respondent responses that matched the coverage provider. Approximately 23% (529 Y, 1758 N) of the providers identified by residential survey respondents listed a provider that matched the mapped coverage provider. Note that most cities and towns in Montana are covered by more than one provider and we could not independently verify the respondent's provider listing. The second assessment was to dissolve all the DSL, fixed wireless or cable technologies of transmission to create a single map layer of any wireline or fixed wireless coverage. We subsequently overlaid the residential and business survey respondents. This latter assessment was used to derive the 93.3% residential and 95.3% business respondents who were located within a mapped coverage.

We further examined the 6.7% of residential respondents that were outside any mapped coverage and measured the proximity to mapped coverage. These results are below.



Methods

The assessment of technology use by Montana households and businesses was based on a social science survey research methodology. Surveys were mailed to homes and businesses across the state using a structured, repeated mailing procedure designed to maximize response rates and the accuracy of results. The survey research process generally followed the widely-accepted design recommendations of D. A. Dillman's Mail and internet Surveys: The Tailored Design Method (Hoboken, NJ: John Wiley and Sons, Inc., 2007).

Survey Instrument

A study questionnaire was developed to obtain information from the general public about their home or business use of internet service. Two versions of the instrument, containing slightly different questions were used for the home and business samples. Both versions of the questionnaire included questions about:

1. The current type of internet service and the name of the service provider
2. Measures of the frequency of use of the internet for common tasks
3. Evaluations of current service
4. Cellular telephone use and the name of provider
5. Evaluations of cellular service
6. Basic household or business characteristics
7. Speed test - respondents were instructed to go to a dedicated survey speed-test web site and log in with their survey ID number to take an internet upload and download speed test.

Although each questionnaire addressed the same basic topics, they were tailored to their target populations, and did not produce directly comparable results between Montana household and business respondents. While the results of both surveys are presented in this report, they represent two independent research efforts.

The surveys were printed in booklet format on heavy resume paper. Booklets consisted of two 8.5 by 11 inch sheets of paper folded and stapled to form eight booklet pages, five of which contained the survey questions. The letter on the inside cover of the survey included information about the study, an appeal to respond, and endorsement signatures from Chad Hultin, manager of the Broadband Development Program, Montana Department of Administration, State Information Technology Service Division, and Neal Christensen, Social Scientist, Christensen Research LP (the social assessment study principal investigator).

Potential survey respondents were contacted through individually addressed mailings up to four times during the study data collection process. Surveys were sent out in three consecutive mailings. The first mailing was for the original survey copy; a replacement was mailed three weeks later; and that was followed three weeks later by a final replacement version. The three versions were identical except for

the informational letter printed on the inside cover, which was slightly modified in its message for the follow-up mailings to re-emphasize the appeal to respond. A reminder / thank you postcard was mailed out in the week following the first mailing of questionnaires to everyone that had not immediately responded or dropped from the study because their address was non-deliverable. The size and timing of each mailing is described below in the section of data collection. Table One provides detailed accounting of the survey procedure.

The questionnaires were printed with a mail-merge process to include unique identification numbers on their front and back covers to track responses while protecting confidentiality. Outgoing questionnaire envelopes were also printed using a mail-merge process for printing names and addresses. The outgoing envelopes included the title "Montana Broadband Connection Survey" along with the official Montana state seal and the logo for the state's Information Technology Service Division. Mailed packets included a stamped and addressed return envelope for returning the surveys. All out-going and return envelopes were stamped with commemorative postage stamps to increase the visual appeal of the survey. Examples of the first-mailing household and business questionnaires are included in appendix B.

Study Populations and Samples

The project assessed reported conditions, behaviors, and opinions across two distinct Montana populations: households and businesses/institutions. Data from the 2010 US Census of housing indicates there are approximately 460,000 occupied housing units in Montana. Various sources suggest there are more than 150,000 businesses and institutions in Montana. These populations are large enough, for statistical calculation purposes, to require standard large sample sizes

Using standard sample size calculations, the initial sample size for the business study was set at 1,000 businesses and institutions. The sample was slightly larger to account for potential bad addresses and closed businesses. A proprietary list of Montana businesses and institutions was used to draw a statewide random sample of names and addresses for the business survey.

A more complex approach was used to obtain a representative household sample, with an initial sample size of 7,000 housing units. This method produced a geographically distributed sample, using US Census housing statistics to apportion the sample according to housing unit density. This process began by compiling a random list of physical property addresses from public records. The random list was distributed across the state according to housing unit density at the US Census block-group level. Commercial internet person-locater services were searched to identify the nearest mailing address and household contact name for each of the physical locations in the sample. Alternative locations within the same geographic vicinity were attempted until a suitable household contact was located for each of the 7,000 targeted sampling points. One of the advantages of using this method, as compared to the purchase of a commercial mailing list, is that it randomly targets specific sampling points rather than relying on consumer behavior or other external trigger, to generate contact information.

Each of the two sampling methods resulted in a significant number of surveys initially returned because of non-deliverable addresses, with each sample loosing approximately 15% due to bad addressing or

unknown addressees. This was an especially acute problem statewide for the business survey because of its relatively small initial sample size, and in specific small communities that became under-represented in the household survey. To help correct this problem a supplemental sample was drawn for some of the deficient areas. This second set of addresses was referred to as 'wave 2' and included over 100 businesses and 200 households. The effort greatly reduced the non-deliverable rate in the business study from 15% to 8%. While the overall non-deliverable rate for the household study ended up at 15%, the final sample was improved in a number of small communities due to the addition of the targeted wave 2 sample.

Data Collection

The first mailing of questionnaires to Montana households and businesses occurred during the week of October 3rd, 2011. A follow-up reminder / thank-you postcard was mailed one week later to most of the original sample; the undeliverable addresses and the few early responses were not included. The second wave of first mailings was sent out to corrected addresses during the week of October 17th, 2011, and included samples of 53 households and 140 businesses. The second copy of the questionnaire was mailed to non-respondents of the first wave during the week of October 24th, 2011. This mailing included a total of 4,700 household and 700 business surveys. A final mailing of surveys was sent to all non-respondents (wave 1 and 2) during the week of November 21st, 2011, and included nearly 4,000 household surveys and 700 business surveys. Acceptance of returned surveys for inclusion in the results reported here was continued through December 15th, 2011. Table 1 provides an accounting of this process.

Non-response Bias Check

Because the survey efforts produced a relatively low response rate of about 38% (in the household study), an additional effort was undertaken to assess the likelihood of a non-response bias in the data. The non-response bias check (NRBC) consisted of conducting short telephone interviews with random samples of businesses and households that had been asked to participate in the study but had not yet responded. The telephone interviews were kept short to maximize participation, and they included only a few key questions from the survey. The home NRBC included 24 interviews derived from 192 attempted household contacts. The business NRBC obtained 44 interviews from 127 attempted contacts. While the sample sizes from the NRBC were small, the process was helpful in assessing the representativeness of the survey samples. The NRBC asked about internet connection, broadband satisfaction, cell phone use, and cell phone reception. None of the responses to these questions in the NRBC were statistically significantly different from their respective survey sample results.

To further improve the study data representation, the NRBC data were added to the main survey data during the analysis of the questions included in both methods. This had little influence in the case of the household sample, but did increase the business survey response rate by several points. Table 1 lists sampling and response characteristics for the household and business surveys. The final adjusted response rates for the household and business surveys were 38% and 37%, respectively. The final sample sizes for the two surveys were 2,286 for the household survey and 341 for the business survey.

Table 1: Sampling and Response characteristics, 2011 Montana Broadband Survey of Households and Businesses.

	Household Survey	Business Survey
Initial Sample Size	7,000	1,000
Nondeliverable addresses / rate	1,059 / 15%	79 / 8%
1st / 2nd / 3rd mailing return rate	24% / 11% / 4%	14% / 8% / 6%
Nonresponse bias sample size	24	38
Surveys returned but answers refused	42	3
Overall adjusted response rate	38%	37%
Final sample size, Q1	2,286	341

Statistical Accuracy

The survey methodology used in this study was based on random sampling to provide statistically reliable estimates of results. The accuracy of the results are dependent on the assumption that the sampling method described above obtained a true un-biased random sample of the targeted population. To help improve the representativeness of the sample of returned household surveys, the data were weighted by the known distribution of the population of Montana housing units, as measured by the 2010 US Census. The weighting was based on the first four digits of the household's mailing zip code. There are 60 polygons with known housing unit densities that represent the 4-digit zip codes to which the household surveys responses were weighted. This weighting helped to correct for sampling deficiencies that may have resulted from the non-deliverable portion of the original random sample, as well as deficiencies arising from geographic differences in response rates.

In addition to meeting the assumption of un-biased random sampling, the accuracy of the study results are also dependent on the size of the sample of survey responses. The sample design called for obtaining a standard of measurement precision that could be statistically quantified at the 95 percent confidence level that the actual population parameters are within a +/- 5 percent margin of error of the statistical estimates. This level of accuracy is generally obtainable for a binomial response split near 50 / 50 using a sample size of about 400 responses. The following set of formulas were used to calculate the reported statistical precision of results, where the sample size (n) and margin of error (E) are given by:

$$x = Z(c/100)^2 r(100-r)$$

$$n = N\,x/((N-1)E^2 + x)$$

$$E = \mathrm{Sqrt}[(N - n)x/n(N-1)]$$

and where (N) is the population size, (r) is the fraction of responses, and (Z(c/100)) is the critical value for the confidence level (c).

Conclusion

The social science assessment research process described in this report provided an opportunity to assess current internet service conditions in Montana as perceived by the general public. This method has the strength of measuring perceptions from a broad representation of the public, regardless of their current use of technology. It is well suited to efficiently measure reported use of technology along with evaluations of that technology. This is a preliminary report.

Appendix A - Select Comments from survey:

- Cell service is bad - a lot of dropped calls or no connections at all need a closer tower for Conrad area!
- Cell companies are too slow and costs too much, are too confusing on their plans, and have limited data provider choices.
- Coverage in eastern MT is awful, and on some towers no data just talk. Not good for doing business on the road.
- Dial-up was incredibly ineffective, we cancelled.
- Don't want internet nor trust it. Identity theft too often on it.
- Due to where we live the only internet service we are able to get is ...satellite. We don't get cable and land-line is extremely slow. Our cell phones do not work at our house.
- Get all of Montana cell phone ready! What happened to the millions of DHS money that went into the 7M project. Weren't those towers to be used for cell phone companies too?
- Had to purchase a cell phone booster to get good cell phone service
- High speed not available and we live in Bozeman city limits!
- I am disappointed that fiber is going in everywhere except Havre. There is little to no regulation or standards to what companies in Montana provide, both in the speed and reliabilities of the service, the wiring, and down to the equipment they provide.
- I was glad to see this survey. One of my greatest irritations is the lack of available high speed internet services. Now the only option is ...is slow and takes away high speed access if you go over 250mb per day of download (then charges you to restore it.
- I was once very pleased with my ISP, back when it was locally owned and operated! They got bought again, again, again, and again. They raised the price and downgraded the service to 1.5 mbs (was 2.5).
- I will probably get internet service in the future. The library is awesome but there are only a limited amount of computers and times to use them. The main use will be research and possibly a home based business. Also my college student son could use the connection.
- I work from home, up-loading and down-loading large graphic files. The cost is expensive and the connection is extremely slow. Would love to have something faster.
- I would use the internet much more (e.g., education) if the service was more reliable.
- If high speed was cheaper and I could get it where I live, I would love it.

- I'm pining for 4G cell service.
- Internet disconnects when the phone rings.
- Internet service can't handle multiple devices.
- It is frustrating that cable and high speed phone (DSL) connections are not available. Even more frustrating is the fact that we are only 10 miles from the largest city in the state. You shouldn't have to pay upward of $100 a month for fast service.
- Just as soon not pay for phone line I'm not really using (except for internet service).
- Just hate satellite service - always exceeding fair access, so is extremely slow. Can't download program or computer updates without driving to town and the library, or we exceed fair access. We do 90% of home business work on-line.
- My internet cost is my highest bill each month next to my heat bill. At $55.95 I think it is too much.
- The local service installed a cell tower in our area, but we cannot use it with our TracPhones. We have to buy and be on their cell plan. Too expensive for us.
- Only reason I have cell phone usage in Monarch MT is because I bought a network extender.... It goes through WIFI for me to be able to use it. Otherwise, no one in this community has cell service.
- Our speed is pretty acceptable for where we are, but it's pretty variable depending on the time of the day. It's a small company and customer service is good but can be slow.
- Oversubscribed! Works great at 3 am.
- Please - We are 25 miles from town and really need internet. We are ranchers, have a home business, and do a lot of volunteering. Our phone lines are really old - the satellite internet is very unreliable, especially with Montana weather.
- Satellite connections are slow. We need access to hard-wire connections that are fast & reliable
- Satellite service has issues and sometimes isn't high speed, would prefer cable but not available also satellite is expensive
- Sometimes we can get on the internet and other times we cannot. Also have to wait and wait to get on.
- Speed greatly declines in summer when tourism picks up considerably.
- The bandwidth varies from 2mbs to 12mbs - we are paying for 15mbs.

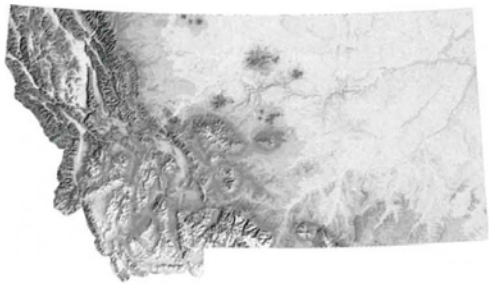
- When we test the bandwidth thru our service provider site it usually is 15 mbs or greater. All other bandwidth tests show 2 to 12 mbs. All of the bandwidth test show sharp peaks and dips during the test.
- The biggest problem holding back high quality voice and data transmissions in MT is the captive market the ILEC's have. No one can compete in their areas. The biggest tech problem is the ancient underlying telephone infrastructure - not dependable.
- The cellular service cannot provide full high speed internet service.
- The cost is too high, and we wish to avoid the intrusiveness of email advertising and 'junk' email.
- The cost of these services is not a good value for the money. The choices are limited and over-priced for what you get, and there seems to be inadequate service areas in this state for the sub-par services that are offered.
- The FCC needs to define broadband as greater than 10 mbs and then fund the build-out in the urban as well as the rural locations. Current policy is making a digital divide between the two. It needs to be equal! Consumers are demanding more and more speed.
- The internet has been the most frustrating thing I deal with….We wonder why our kids leave this state for job opportunity. My speed test is even stuck!
- The only reason we keep our landline is for internet.
- There are a lot of people who live around here who would use broadband internet. Yes it makes me angry to have to have satellite for TV & internet.
- There are companies in Montana right now providing or trying to provide broadband to rural Montana at a high price to the companies. The ROI and business plan is non-existent. So quit surveying and invest my tax money to service Montana.
- There is now no cell service between Billings and Roundup.
- They say I should receive 5 mbs but it only gets to 2 mbs.
- This area (Hot Springs) needs cell phone service. If the power goes out and you don't have a land line; or the added expense of getting a land line.
- This is a slow internet connection compared to connection from local phone company. I chose to use the cell phone company because I did not want to have to pay to have a landline too.
- Throttling - paid for 1.5 mbs but never see anything above 700 kbs download speed.
- I use my cell phone for most internet browsing

- We are definitely interested in better service. (The last provider was) unable to provide access that allows us to stream movies, classes, or anything that requires a lot of space / time - we end up using our allotted space / time.
- We are paying for high speed but don't get it!
- We are very concerned about lack of privacy and all the fraud connected with having the internet
- We cannot connect to any connections and have been referred to satellite. We live in the timber and the cost of putting in a satellite dish and trenching is very expensive.
- We experience audio and video delays during distance therapy for my deaf son.
- We had dial-up for a couple of years, but it was too slow
- We have asked for years for DSL. Many people near us have it. I have received numerous answers, most recently the capability is full and we won't get it until fiber optics are installed sometime in 2013.
- We need free public internet service in all towns and cities in Montana.
- We pay too much for internet, just because we live out of town.
- We use our home internet a lot less now that we have smart phones.
- We wish eastern Montana had better cell reception. We purchased an antennae that helps some at our home - but even it is so-so. Would be nice to have a smart phone - but too expensive for the reception we have.
- We would love a faster internet service for those of us who are students. With today's technology being crucial to success and survival in the world, I would ask that the cost for technology be held to reasonable limits.
- What makes sense is to have free internet zones with no access charge. The zones should cover the city/town center in every city and town. Outside that zone, service should be included with phone service.
- When we travel to rural areas for recreation we do not usually have cell phone reception.
- You need a separate computer to hook up to www sewer. Why hook up and use it with programs you like only to be ruined by viruses?

Appendix B: Survey Instruments

ID Number: 99999

Montana Home



Broadband Connection Survey

Fall 2011

If you have questions about this study, please contact Neal Christensen:
neal@ChristensenResearch.com
or
Christensen Research LP
PO Box 1780, Missoula, MT 59806

Montana Home Broadband Connection Survey

The State of Montana's Broadband Program is currently assessing broadband services in communities across the state such as Internet and cellular services. Broadband services touch all parts of Montana including economic development, education, healthcare, public safety, ranching, agriculture, and civic engagement. This household survey is an integral part of that assessment and is designed to help identify Montana's current high speed broadband Internet service and use.

Your input is very important to improve planning for the future of the state's broadband Internet infrastructure. Your response will take just a few minutes and your answers will not be associated with your identity. The ID number on the front cover of this questionnaire is used for response tracking only.

Please complete the form and mail it back to us in the included stamped and addressed return envelope. Thank you in advance for your help.

Sincerely,

Chad Hultin, Program Manager
Broadband Program
Montana Department of Administration
State Information Technology Service Division

Neal Christensen, Social Scientist
Christensen Research LP
Missoula, MT

Home Internet Service:

Q1. Is there a working Internet connection at the home where this survey was mailed? *(circle one response)*

1. Yes → *Go to Question 2 directly below*
2. No → *Skip ahead to Question 4 on the next page*
3. I do not know if this home has a connection → *Thank you, please ask another household member to complete the survey*

Q2. What is the primary (fastest or most reliable) Internet service to this home? *(circle the response that shows how the Internet comes into your home, rather than how it is connected to your computer)*

1. Dial-up phone line - a slower 'landline' connection often provided by a telephone company. This type of connection produces a 'dial-tone' and 'connect-tone' when connecting the modem.
2. DSL phone line - Digital Subscriber Line, a higher speed landline connection often provided by a telephone company. This type of modem connection is 'always on.'
3. Cellular service or mobile card - a higher speed connection provided by your cell phone service, may be provided as a data package added to your existing cell phone service.
4. Fixed wireless - higher speed through an external receiver on your premises or an antenna connected to your computer.
5. Satellite - Higher speed connection from a satellite dish.
6. Cable - Higher speed connection often provided by a cable TV company, may be bundled with television and phone services.
7. Fiber - High speed fiber-optic connection. This is a dedicated circuit, typically used in businesses.
8. Other *(specify)*_____
9. Do not know the type of Internet connection at this home.

Q3. What is the name of the company that provides this home's primary Internet service? *(write in name or circle Don't Know)*

_____

Or

DK: I don't know the home Internet service provider company name.

Q4. Which of the following statements best describes the current primary Internet service at this home: *(circle the best response and explain)*

1. This home does not have an Internet connection and I am not interested in getting one. → *Skip two pages to Q7*
2. This home does not have an Internet connection but I would like one. *(explain why you do not have an Internet connection)*

   _____

   _____ → *Skip two pages to Q7*
3. There is a slow-speed Internet connection at this home that I am satisfied with.
4. I would like a high speed broadband Internet connection, but it is not available at this home.
5. There is an Internet connection at this home that is too slow and I would like to upgrade to high speed broadband. *(explain why you have not upgraded)*

   _____

   _____
6. There is a high speed broadband Internet connection at this home that I am satisfied with.
7. There is a high speed broadband Internet connection at this home that I am not happy with. *(explain why you are not satisfied with the current service)*

   _____

   _____
8. There is an Internet connection here, but I do not have a computer.

Home Internet Use:

Q5. How often does anyone in this household use the home Internet for the following tasks? *(circle one scale response for each statement that best represents your household use of the Internet)*

	Several times a day	About once a day	At least once a week	Less often	Never
General:					
a. Read current news, weather, events	4	3	2	1	0
b. Pay bills, online banking	4	3	2	1	0
c. Shopping, eBay	4	3	2	1	0
d. Mapping, Google Earth	4	3	2	1	0
e. Search for information	4	3	2	1	0
f. Watch online movies, videos, programs	4	3	2	1	0
Educational:					
g. Online training, education courses	4	3	2	1	0
h. Check student grades, homework	4	3	2	1	0
Professional, Work-related:					
i. Search for a job	4	3	2	1	0
j. Home-based business	4	3	2	1	0
k. Telecommute to work	4	3	2	1	0
Communications, Keeping in Touch:					
l. Email	4	3	2	1	0
m. Voice calls over Internet (e.g., Skype)	4	3	2	1	0
n. Social networking	4	3	2	1	0
Government Services:					
o. Tax related research, filing, payment	4	3	2	1	0
p. Request permits and licenses	4	3	2	1	0
q. Use government information services	4	3	2	1	0
Health Care:					
r. Search for medical information	4	3	2	1	0
s. Online doctor appointment	4	3	2	1	0
t. Communicate with health provider	4	3	2	1	0

Home Internet Performance:

Q6. How would you rate the overall performance of each of the following aspects of your current household Internet service? *(circle one rating for each aspect)*

	Very Poor	Poor	Good	Very Good	No Opinion
a. Speed	-2	-1	1	2	X
b. Reliability	-2	-1	1	2	X
c. Cost	-2	-1	1	2	X
d. Customer service	-2	-1	1	2	X
e. Choice of providers	-2	-1	1	2	X

Household Use of Other Technology:

Q7. Do you have a home-based business at this location? *(circle one response for each part of the question)*

1. Yes → 1. Part-time *or* 2. Full-time
2. No

Q8.Does anyone in this household use the Internet at a public library? *(circle one response)*

1. Yes *or* 2. No

Q9. If someone in this household uses the Internet at a public library, please explain why that service is used rather than a home Internet computer connection. *(explain library use of Internet).*

_____

_____

Household Cellular Telephone Use:

Q10. Does anyone in this household use a cellular telephone? *(circle one response)*

1. Yes - Name of provider: _____
2. No → *Skip ahead to Question 15 on the next page*

Q11. Do you get usable cellular telephone reception at this home? *(circle one response)*

1. Yes, there is cell phone reception
2. No, there is little or no cell reception at this home location

Q12. How would you rate the cellular telephone reception at this home location and while you travel in Montana? *(circle one rating for each type of reception)*

	Very Poor	Poor	Good	Very Good	No Opinion
Cell phone reception at home	-2	-1	1	2	X
Cell phone reception while traveling in Montana	-2	-1	1	2	X

Q13. What was the primary reason you first purchased a cellular telephone? *(circle one response)*

1. Emergency assistance
2. Primary home phone, rather than a landline telephone
3. Travel
4. Other *(specify)*_____

Q14. Does anyone in this household use a smart phone with a data plan for email and other applications? *(circle one response)*

1. Yes, household member(s) use a smart phone and data plan
2. No, this household only uses basic cellular telephone service

Household Characteristics:

Q15. How would you describe this household? *(circle one response)*

1. Single person
2. Couple, family
3. Friends, unrelated roommates

Q16. Are there children living in this household? *(circle 'yes' or 'no' for each age group)*

a. Younger than 13 years old: 1. Yes *or* 2. No

b. Between 13 and 17 years old: 1. Yes *or* 2. No

Home Internet Speed Test: *(turn to back cover for instructions)*

Q17. If you have Internet service in the home where this survey was mailed, you are encouraged to take the internet connection speed test at the following web site:

http://mtbroadband.org/survey/

You will be asked to log into the speed test by typing in your survey ID number:

99999

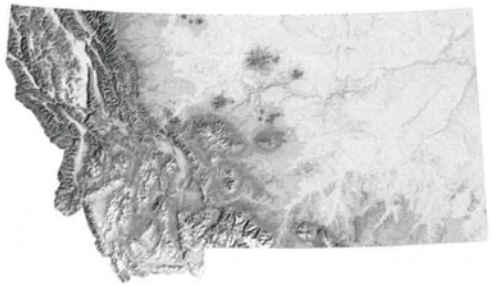
The test takes a couple of minutes. You will be shown the results of the speed test so that you know the speed of the internet service currently used in this location. Please take the speed test at the home where this survey was mailed.

Thank you - please mail the completed form in the return envelope.

Continue explanation or add comments below.

ID Number: 99999

Montana Business



Broadband Connection Survey

Fall 2011

If you have questions about this study, please contact Neal Christensen:
neal@ChristensenResearch.com
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PO Box 1780, Missoula, MT 59806

Montana Business Broadband Connection Survey

The State of Montana's Broadband Program is currently assessing broadband services in communities across the state such as Internet and cellular services. Broadband services touch all parts of Montana including economic development, education, healthcare, public safety, ranching, agriculture, and civic engagement. This business survey is an integral part of that assessment and is designed to help identify Montana's current high speed broadband Internet service and use.

Your input is very important to improve planning for the future of the state's broadband Internet infrastructure. Your response will take just a few minutes and your answers will not be associated with your identity. The ID number on the front cover of this questionnaire is used for response tracking only.

Please complete the form and mail it back to us in the included stamped and addressed return envelope. Thank you in advance for your help.

Sincerely,

Chad Hultin, Program Manager
Broadband Program
Montana Department of Administration
State Information Technology Service Division

Neal Christensen, Social Scientist
Christensen Research LP
Missoula, MT

Business Internet Service:

Q1. Is there a working Internet connection at the business location where this survey was mailed? *(circle one response)*

1. Yes → *Go to Question 2 directly below*
2. No → *Skip ahead to Question 4 on the next page*
3. I do not know if this business location has a connection → *Thank you, please ask another employee to complete the survey*

Q2. What is the primary (fastest or most reliable) Internet service at this business location? *(circle one response that best describes how the Internet comes into the business, rather than how it is connected to your computer)*

1. Dial-up phone line - a slower 'landline' connection often provided by a telephone company. This type of connection produces a 'dial-tone' and 'connect-tone' when connecting the modem.
2. DSL phone line - Digital Subscriber Line, a higher speed landline connection often provided by a telephone company. This type of modem connection is 'always on.'
3. Cellular service or mobile card - a higher speed connection provided by your cell phone service, may be provided as a data package added to your existing cell phone service.
4. Fixed wireless - higher speed through an external receiver on your premises or an antenna connected to your computer.
5. Satellite - Higher speed connection from a satellite dish.
6. Cable - Higher speed connection often provided by a cable TV company, may be bundled with television and phone services.
7. Fiber - High speed fiber-optic connection. This is a dedicated circuit, typically used in businesses.
8. T1 - High speed dedicated copper wire.
9. Other *(specify)*_____

Q3. What is the name of the company that provides this business's primary Internet service? *(write in name or circle Don't Know)*

_____

Or

DK: I don't know the business's Internet service provider name.

Q4. Which of the following statements best describes the current primary Internet service at this business location: *(circle the best response and explain)*

1. This business does not have an Internet connection and I am not interested in getting one. → *Skip two pages to Q7*
2. This business location does not have an Internet connection but I would like one. *(explain why you do not have an Internet connection)*

   _____

   _____ → *Skip two pages to Q7*
3. There is a slow-speed Internet connection at this business location that I am satisfied with.
4. I would like a high speed broadband Internet connection, but it is not available at this business location.
5. There is an Internet connection at this business location that is too slow and I would like to upgrade to high speed broadband. *(explain why you have not upgraded)*

   _____

   _____
6. There is a high speed broadband Internet connection at this business location that I am satisfied with.
7. There is a high speed broadband Internet connection at this business location that I am not happy with. *(explain why you are not satisfied with the current service)*

   _____

   _____
8. There is an Internet connection here, but I do not have a computer.

Business Internet Use:

Q5. How often does anyone at this business location conduct the following Internet tasks for business purposes? *(circle one scale response for each statement that best represents your business use of the Internet)*

	More than once per day	About once a day	At least once a week	Less often	Never
a. Online training, education courses	4	3	2	1	0
b. Search for information	4	3	2	1	0
c. Mapping, Google Earth	4	3	2	1	0
d. Pay bills, online banking	4	3	2	1	0
e. Order supplies, equipment	4	3	2	1	0
f. Provide online customer service	4	3	2	1	0
g. Fill orders, sell products online	4	3	2	1	0
h. Respond to information requests	4	3	2	1	0
i. Email	4	3	2	1	0
j. Voice calls over Internet (e.g., Skype)	4	3	2	1	0
k. Tax related research, filing, payment	4	3	2	1	0
l. Request government permits or licenses	4	3	2	1	0
m. Use government information services	4	3	2	1	0
n. Social Network (e.g., Facebook, Twitter)	4	3	2	1	0
o. File sharing (e.g., Dropbox, Google Docs)	4	3	2	1	0
p. Watch Video (e.g., You Tube)	4	3	2	1	0

Business Internet Performance:

Q6. How would you rate the overall performance of each of the following aspects of your current business Internet service? *(circle one rating for each aspect)*

	Very Poor	Poor	Good	Very Good	No Opinion
a. Speed	-2	-1	1	2	X
b. Reliability	-2	-1	1	2	X
c. Cost	-2	-1	1	2	X
d. Customer service	-2	-1	1	2	X
e. Choice of providers	-2	-1	1	2	X

Q7. How would you rate the importance of the following potential improvements to Montana's broadband infrastructure? *(circle one rating for each potential outcome)*

	Importance				
	Slight		Moderate		High
a. Increase the availability of broadband	1	2	3	4	5
b. Expand online training opportunities	1	2	3	4	5
c. Improve telecommuting and home business opportunities	1	2	3	4	5
d. Enhance fire, medical, and law enforcement emergency response	1	2	3	4	5
e. Improve government online services	1	2	3	4	5
f. Enhance the state's attractiveness to new businesses	1	2	3	4	5
g. Lower the cost of broadband services	1	2	3	4	5
h. Help businesses with cyber-security	1	2	3	4	5
i. Promote entrepreneurship	1	2	3	4	5
j. Expand Montana business markets	1	2	3	4	5
k. Increase telemedicine applications	1	2	3	4	5
l. Improve agricultural efficiency	1	2	3	4	5

Business Cellular Telephone Use:

Q8. Do any employees of this business use a cellular telephone provided by the business? *(circle one response)*

1. Yes - Name of provider: _____
2. No ➔ *Skip to next page, Q11*

Q9. Does anyone in this business use a smart phone with a data plan for email and other applications provided by the business? *(circle one response)*

1. Yes, one or more employees use a smart phone and data plan
2. No, this Business only uses basic cellular phone service

Q10. How would you rate the cellular telephone reception at this business location and while you travel in Montana? *(circle one rating for each type of reception)*

	Very Poor	Poor	Good	Very Good	No Opinion
a. Cell phone reception at this business	-2	-1	1	2	X
b. Cell phone reception while traveling in Montana	-2	-1	1	2	X

Business Characteristics:

Q11. Is this a business that is located in a home? *(circle one response)*

1. Yes
2. No ➔ *Skip ahead to Question 13*

Q12. If you have a home-based business at this location, is it a part-time or full-time business? *(circle one response)*

1. Part-time
2. Full-time

Q13. How many people work at this business location, and how many of them use computers as part of their job? *(enter the number of employees at this location for parts a and b)*

a. Total number of employees: _____

b. Total number of computer users: _____

Q14. Type of business at this location: *(check all that apply)*

- ☐ Government
- ☐ Education (Primary & Secondary)
- ☐ Retail
- ☐ Business and Economic Development
- ☐ Medical (health care)
- ☐ Non-profit
- ☐ Higher Education
- ☐ Agriculture
- ☐ Technology
- ☐ Other: *(explain)*

_____

Business Internet Speed Test: *(turn to back cover for instructions)*

Q15. If you have Internet service in the business location where this survey was mailed, you are encouraged to take the internet connection speed test at the following web site:

http://mtbroadband.org/survey/

You will be asked to log into the speed test by typing in your survey ID number:

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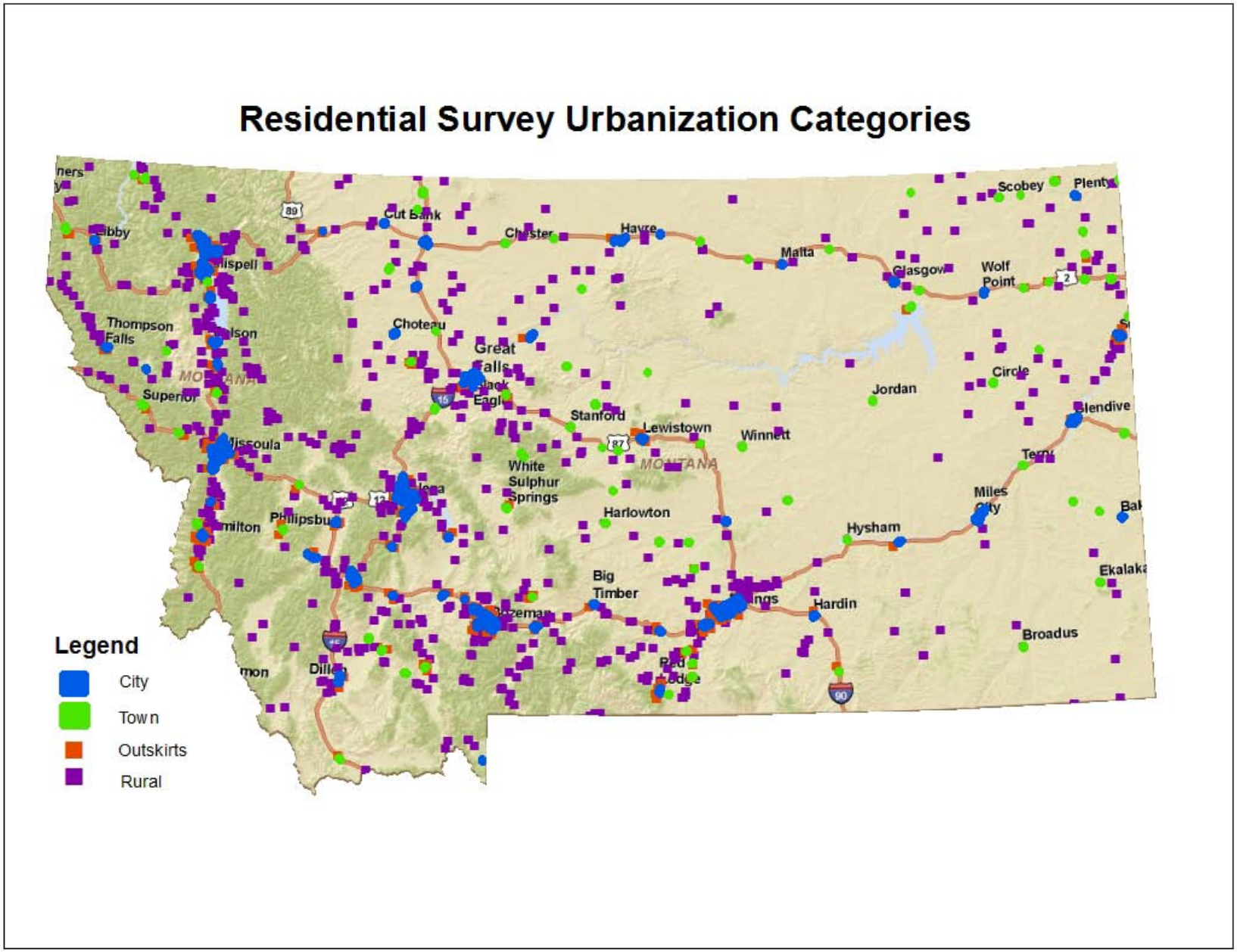
Appendix C: Urbanization Classification Map