Using Alternative Mailing Strategies to Boost Internet Response in an Establishment Survey

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Abstract

The Bureau of Labor Statistics (BLS) fielded the Green Technologies and Practices (GTP) Survey in 2011 and 2012. During survey development, respondents repeatedly advised BLS that they would be more inclined to respond to a green survey if they could do it in a green manner, so an online method of response was developed for the survey. Internet collection benefits the environment by reducing printing and USPS delivery, as well as saving time and taxpayer money by allowing for earlier responses, respondent key-entry of data, and online editing of survey responses. A much lower than anticipated Internet response was recorded during the first production survey in 2011, and when plans began for the next round of data collection beginning October 2012, steps were taken to "push" internet collection to a targeted group of sample units. This paper summarizes the procedures and reporting results for the two GTP surveys conducted in 2011 and 2012, and discusses the alternative mailing strategies employed in the 2012 survey to boost the Internet reporting rate.

Keywords: Green jobs, internet data collection, mixed-mode surveys, response rates

Background

The Bureau of Labor Statistics (BLS) began developing the Green Technologies and Practices (GTP) Survey in September 2010. The survey was designed to collect and produce information on the number of jobs and the wages of workers using green technologies and practices as a substantive part of their jobs. The GTP Survey counted jobs in which workers' duties involved making their establishment's production processes more environmentally friendly or use fewer natural resources. It did so by first asking respondents whether the establishment used green technologies and practices and, if so, whether the establishment had employees whose duties were related to these technologies and practices. Second, the survey asked respondents to report the job titles, a brief description of the job duties, and the wages of employees who spent more than half of their time using green technologies and practices on the job. The 2011 GTP survey was developed as a mixed-mode survey initially offering three response methods: a traditional mail response option; an Internet option; and an e-mail reporting method utilizing an Adobe© fillable form. Telephone follow-up was incorporated later in the survey collection cycle to raise the response rate, and facsimile reporting was offered as a time-saving last resort to all remaining non-respondents.

This paper summarizes the procedures and response results for the 2011 and 2012 GTP surveys, and analyzes the alternative mailing strategies employed in 2012 to improve the survey's Internet reporting rate.

Early testing and designing the survey

Internet data collection is a green practice that benefits the environment by reducing printing (conserving natural resources) and USPS delivery (reducing greenhouse gas emissions). It also saves time and taxpayer money by allowing for quicker responses, respondent key-entry of data, and online editing of survey responses, resulting in less required follow-up with respondents. Through early cognitive interviews conducted with green establishments (establishments that advertised green practices, or received green awards), BLS learned that a survey about green practices would require a greener method of response than traditional paper forms being mailed back and forth between the BLS and employers. Based on these interviews with respondents, BLS anticipated that a significant portion of the survey's respondents would choose Internet reporting, or question the lack of an online reporting method, and so the necessary resources were expended in developing and testing a secure GTP Internet form for use in the first production survey.

Development and testing of the online form, prior to the production survey, had three main objectives: (1) design the survey form and question wording; (2) refine the field collection procedures; and (3) determine how many respondents could be expected to respond to the survey via the Internet reporting option (i.e., determine the expected Internet reporting rate.) The Internet reporting rate obtained in testing the final survey design and procedures was 35 percent.[1] This result was encouraging and consistent with the desire to report online expressed by the respondents in the cognitive interviews.

GTP is the first BLS survey designed for Internet collection without the constraint of requiring the online version to look like the paper version. Internet collection allows for an interactive data collection experience where question skip patterns can be programmed rather than relying on respondents to navigate question patterns based on their answers. Therefore, a conscious decision was made during the design phase not to mirror the 6-page, hard-copy survey document with its grid design and instructional arrows, as has often been suggested in the survey literature to minimize mode effects, but to instead use technology to streamline the online form.[2]

2011 GTP Internet Results

The 2011 GTP survey began in September 2011, with five mailouts conducted over four and a half months, as shown in Table 1. Mail, Internet, and e-mail were initially offered as response methods to all sample units. The total postage and printing cost for the 2011 GTP Survey mailouts was $135,383.

Table 1 – 2011 GTP Survey Mailout Schedule

Mailout	Date	Pieces	Solicitation Letter	Form	BRM Envelope	Internet and E-mail Instructions	Postcard	Fax Form
1st	9/19/11	33,389	X	X	X	X		
2nd	10/18/11	26,297					X	
3.1*	10/27/11	18,241	X	X	X	X		
3.2*	11/21/11	6,975	X	X	X	X		

[1] Forms Design & Pilot Testing for the Green Practices and Processes Project – Panel 5 Response and RAS Tables Internal Report – Strategic Research Group, Inc. 8/12/11.

[2] For copies of the paper survey form or Internet form screens, contact Sharon Stang at stang.sharon@bls.gov or Bill Mockovak at mockovak.william@bls.gov.

4th	1/11/12	13,558					X	
5th	1/30/12	13,558						X

* The 3rd mailout was staggered due to an envelope shortage.

At the close of 2011 data collection (in March 2012), the survey had achieved an overall 70 percent adjusted usable response rate with 22,701 usable responses. Nine percent of these were reported via the Internet form, 37 percent via the mail survey form, 47 percent via telephone, and 7 percent though fax and e-mail. The postage and handling cost per piece for the survey's mailed responses was 52.3 cents, resulting in an additional $4,390 in Business Reply Mail (BRM) postage fees.

A detailed analysis of the survey responses confirmed several prior research findings:

- larger establishments were more likely to report data via the Internet (see table 2), and
- greener establishments (those reporting having employees that spent more than half of their time using green technologies or practices) were more likely to report data via the Internet (see table 3).

Table 2 – 2011 GTP Usable Responses by Selected Mode by Employment Size

Employment	Internet	% of Internet	% of Total *	Mail	% of Mail	% of Total *	Tel.	% of Tel.	% of Total *	Sum of Modes*	% of Sum
1-4	148	7%	5%	1,408	17%	48%	1,232	12%	42%	2,917	13%
5-9	85	4%	5%	673	8%	43%	723	7%	46%	1,564	7%
10-19	107	5%	7%	636	8%	39%	799	8%	49%	1,615	7%
20-49	209	10%	8%	1,031	12%	39%	1,287	12%	48%	2,674	12%
50-99	245	14%	11%	899	13%	39%	989	13%	43%	2,288	10%
100-249	292	14%	10%	1,128	13%	38%	1,335	13%	45%	2,969	13%
250-499	210	10%	12%	614	7%	34%	841	8%	47%	1,803	8%
500-999	170	8%	13%	417	5%	32%	614	6%	47%	1,303	6%
1000+	683	32%	12%	1,583	19%	28%	2,750	26%	49%	5,568	25%
***Total**	2,149		9%	8,389		37%	10,570		47%	22,701	

* % of Total responses and Sum of Modes includes 843 fax and 750 e-mail responses.

Table 3 – 2011 GTP Establishments Reporting Green Employment by Mode

	Internet	Mail	Telephone	All*
# Responses	2,149	8,389	10,570	22,701
# Reporting Green Employment	411	916	1,001	2,609
% Reporting Green Employment	19.1%	10.9%	9.5%	11.5%

* All responses includes 843 fax and 750 e-mail responses.

Respondents' use of Internet reporting for the 2011 GTP survey failed to meet the 35 percent reporting expectation from the final survey test. The Internet reporting rate dropped to nine percent for the 2011 production survey. It's worth noting that while the sample for the final production test was randomly selected, respondents who participated in the cognitive interviews were selected largely based on their involvement in green activities and their attitudes toward green survey methodologies may not have reflected the general business community's commitment to the environment (Stang and Jones, 2011). In hindsight, perhaps this result should not have been a surprise as previous research has shown that Internet surveys attain lower response rates than equivalent mail surveys (Crawford et al., 2001, Mockovak, 2011).

After fielding the GTP survey in 2011, plans began for the next round of data collection beginning in October 2012. Extensive research into targeting the mode of collection based on the characteristics of a firm had already been conducted by the BLS Occupational Employment Statistics (OES) Program. After looking at a variety of characteristics, and combinations of characteristics (industry, size, geography), OES research concluded that larger firms are more likely to respond electronically when given the option (Jones, C.K., 2010). Research also suggests that when respondents are initially offered concurrent multiple modes of response, overall response rates may drop (Griffin, 2001; Medway and Fulton, 2012). This phenomenon may have affected the 2011 GTP response rate as three options for responding were offered in the initial survey packages: mail, Internet, and e-mail.

2012 GTP Mailing Strategies

In general, the Internet reporting rate for the 2011 survey was problematic for the BLS. At just over nine percent of survey respondents, it was too low to be considered a repeatable exercise (designing a separate data collection mode and form for the Internet given the time and expense associated with development and testing). At the same time, it clearly showed that a significant portion of the green occupational data was reported via the Internet, and that the characteristics of Internet respondents with respect to their having a higher incidence of green employment could have an impact on the estimates if Internet collection was not made available.

In conducting the GTP survey for 2012, steps were taken with the mailout strategies to maximize the Internet reporting rate. Based on the results of the 2011 GTP survey, and the previously referenced research conducted for the OES survey, BLS knew that larger businesses had a greater tendency to respond using the Internet. Therefore, the decision was made to "push" the use of the Internet in this group, and therefore maximize its use, by sending out a survey solicitation that only mentioned the Internet reporting option. The design and mailing strategies are shown in Table 4 below.

Smaller establishments (those with fewer than 500 employees) were informed about all reporting options (paper, Internet, e-mail) in the solicitation materials for Mailouts #1 and #2, while la**r**ger establishments (those with 500 or more employees) were only offered the Internet-reporting option in Mailouts #1 and #2 (no survey form provided). In Mailout #3, the larger establishments were offered all reporting options (paper, Internet, e-mail), whereas small establishments only received a reminder postcard. Mailouts #4 and #5 included a copy of the 3-page faxable form for all establishments. The total postage and printing cost for the 2012 GTP Survey mailouts was $134,829. This was slightly less than the 2011 postage and printing cost of $135,383.

Table 4 – 2012 GTP Survey Mailout Schedule

Mailout by Establishment Employment	Date	Pieces	Solicitation Letter	Form	Business Reply Mail Envelope	Internet and E-mail Instructions	Postcard	Fax Form
1st - <500	10/9/12	24,075	X	X	X	X		
1st - 500+	10/9/12	10,463	X			X		
2nd - <500	11/9/12	19,934	X	X	X	X		
2nd - 500+	11/9/12	9,636	X			X		
3rd - <500	11/30/12	15,132					X	
3rd - 500+	12/7/12	8,401	X	X	X	X		
4th - all	2/8/13	17,956	X					X

5th - all	3/22/13	12,590	X					X

At the close of data collection in April 2013, the survey had achieved an overall 58 percent adjusted usable response rate with 19,621 usable survey responses. Sixteen percent of these were reported via the Internet, 37 percent via the mail survey form, 36 percent via telephone, and 11 percent though fax and e-mail. The postage and handling cost per piece for the survey's mailed responses was slightly higher at 53.7 cents, resulting in an additional $3,900 in BRM postage fees.

Table 5 – 2012 GTP Usable Responses by Selected Mode by Employment Size

Employment	Internet	% of Internet	% of Total*	Mail	% of Mail	% of Total *	Tel.	% of Tel.	% of Total*	Sum of Modes	% of Sum
1-4	254	8%	9%	1,363	19%	48%	1,060	15%	38%	2,826	14%
5-9	114	4%	8%	693	9%	47%	551	8%	37%	1,475	8%
10-19	137	4%	9%	678	9%	44%	610	9%	40%	1,527	8%
20-49	286	9%	12%	1,121	15%	45%	878	12%	36%	2,464	13%
50-99	247	8%	12%	873	12%	44%	696	10%	35%	1,993	10%
100-249	362	12%	14%	1,033	14%	41%	874	12%	35%	2,525	13%
250-499	232	8%	15%	611	8%	40%	526	7%	35%	1,514	8%
500-999	245	8%	24%	214	3%	21%	365	5%	36%	1,003	5%
1000+	1,191	39%	28%	711	10%	17%	1,561	22%	36%	4,294	22%
***Total**	3,068		16%	7,297		37%	7,121		36%	19,621	

* % of Total responses and Sum of Modes includes 842 fax and 1,293 e-mail responses.

A detailed analysis of the 2011 and 2012 usable Internet responses shows some promising results. (See Tables 6 and 7).

- Establishments with 500 or more employees comprised 47 percent of usable Internet responses in 2012, an increase of seven percent from 2011.
- The total number of usable Internet responses for establishments with 500 or more employees increased by 68 percent from 2011 to 2012, from (853 to 1,436).
- The total number of usable Internet responses increased by 43 percent from 2011 to 2012, (from 2,149 to 3,068).
- The percentage of respondents reporting green employment via Internet increased from 19.1 in 2011, to 23.7 in 2012.
- The average number of green occupations reported by a respondent via Internet in 2012 was 0.651, while the average number reported in 2011 was 0.578.

Table 6 – GTP Internet Responses by Employment Size, 2011 and 2012.

	2011			2012		
Employment	**Internet**	**% of Internet**	**% of Total**	**Internet**	**% of Internet**	**% of Total**
1-4	148	7%	5%	254	8%	9%
5-9	85	4%	5%	114	4%	8%
10-19	107	5%	7%	137	4%	9%
20-49	209	10%	8%	286	9%	12%
50-99	245	14%	11%	247	8%	12%
100-249	292	14%	10%	362	12%	14%
250-499	210	10%	12%	232	8%	15%
500-999	170	8%	13%	245	8%	24%
1000+	683	32%	12%	1,191	39%	28%
	2,149		9%	3,068		16%

Table 7 – GTP Internet Respondents Reporting Green Employment, 2011 and 2012

	2011	2012
Reporting Green Employment	411	727
% Reporting Green Employment	19.1	23.7
Average number of occupations reported per response	0.578	0.651
Total Responses	2,149	3,068

2011 and 2012 GTP Mailing Costs

The cost savings associated with the printing and mailing of survey letters for the targeted sample was not as large as expected at least in part because USPS postal rates increased significantly between 2011 and 2012. The USPS postage cost for the full mailout package increased by 8 cents between 2011 and 2012, and for postcards the increase was 11 cents. At the same time, the BRM postage and handling increases were minimal at just over one cent per piece.

The contents of the mailout packages for the targeted sample, coupled with the lower postage rate for a smaller and lighter envelope, reduced the total cost per unit for the targeted sample by 60 cents for the first and second mailouts. Unfortunately, with this cost per unit decrease came an increase in the total number of pieces mailed. The overall increase in the number of pieces mailed was 6,169 for the 2012 survey resulting in a printing and postage cost savings of just $554. (See Table 8).

Table 8 – GTP Mailing Costs 2011 and 2012

2011 Costs	Mailout 1		Mailout 2 - Postcard		Mailout 3.1	Mailout 3.2	Mailout 4 - Postcard	Mailout 5 - FAX	Total
Printing & Processing	$38,886.04		$1,553.59		$14,890.04	$12,051.27	$845.25	$8,191.15	$76,417.34
Postage	$23,342.79		$7,636.57		$13,802.66	$5,487.24	$3,932.98	$4,763.84	$58,966.08
Total	$62,228.83		$9,190.16		$28,692.70	$17,538.51	$4,778.23	$12,954.99	**$135,383.42**
Cost per unit mailed	$1.86		$0.35		$1.57	$2.51	$0.35	$0.96	
Cost per unit Printing and Processing	$1.16		$0.06		$0.82	$1.73	$0.06	$0.60	
Cost per unit Postage	$0.70		$0.29		$0.76	$0.79	$0.29	$0.35	
Number of units mailed	33,389		26,297		18,241	6,975	13,558	13,558	**112,018**
BRM Postage									$4,390.00
2012 Costs	**Mailout 1-Small**	**Mailout 1-Large**	**Mailout 2-Small**	**Mailout 2-Large**	**Mailout 3-Small Postcard**	**Mailout 3-Large**	**Mailout 4 - All FAX**	**Mailout 5 - All FAX**	**Total**
Printing & Processing	$25,871.22	$6,408.25	$10,683.04	$3,969.40	$4,514.48	$4,418.03	$6,527.28	$3,982.25	$66,372.96
BRM Postage									$3,900.00
Postage	$18,723.61	$4,375.57	$15,548.40	$4,041.01	$6,410.73	$6,651.86	$7,441.24	$5,263.02	$68,456.43
Total	$44,594.83	$10,783.82	$26,231.44	$8,010.41	$10,925.21	$11,069.89	$13,968.52	$9,245.27	**$134,829.39**
Cost per unit mailed	$1.46	$0.86	$1.47	$0.87	$0.72	$1.32	$0.78	$0.73	

Cost per unit Printing and Processing	$0.68	$0.44	$0.69	$0.45	$0.30	$0.52	$0.37	$0.31	
Cost per unit Postage	$0.78	$0.42	$0.78	$0.42	$0.42	$0.80	$0.41	$0.42	
Number of units mailed	24,075	10,463	19,934	9,636	15,132	8,401	17,956	12,590	**118,187**
BRM Postage									$3,900.00

The number of mailed survey responses utilizing the BRM envelopes for the 2012 survey dropped by 1,092 from the 2011 survey, saving another $550 in BRM charges, resulting in a total savings of about $1,100 or $1.19 per additional automated response via Internet.

Conclusion

The BLS set out to improve the Internet reporting rate for the 2012 GTP survey by "pushing" Internet collection at larger establishments. BLS hoped that by increasing the Internet reporting rate 1) the overall survey response rate would improve, 2) the survey processing costs associated with mail survey replies would be reduced, and 3) the environmental impact of printing and mailing survey forms would be reduced.

The 2012 GTP Internet reporting rate increased by 37 percent from 2011. Internet reporting for the targeted establishments (those with 500 or more employees) increased by 66 percent from 2011. By using the targeted approach for larger establishments BLS was successful in steering these firms toward electronic response. In addition to increasing Internet reporting, there was also a 72 percent increase in e-mail data collection from 750 establishments in 2011, to 1,293 in 2012.

However, a comparison of the collection mode reporting rates for the two surveys suggests that the increase in Internet and Email/FAX responses came at the expense of mail and telephone responses, and that offering Internet reporting to respondents may change their reporting method and achieve efficiencies in processing responses, but not impact their reporting habits, i.e., entice survey non-respondents into reporting with online collection. The overall response rate for the 2012 GTP survey was 12 points lower than the 2011 survey, primarily due to the decrease in telephone collection. As noted by Olson et al. (2012) in their experimental study of mode preference, offering a Web option along with a mail survey did not increase the response rate over a mail survey alone for any mode preference, and they suggest that the cost-benefits of offering a Web option versus mail alone should be carefully assessed. In our case, pushing the Web reporting option lowered overall response and led to fewer telephone and mail responses. This phenomenon of lowering the overall response rate has also been experienced in other BLS surveys that have pushed the use of the Internet for data collection (Downey et al. 2007).

Table 9 – GTP Responses by Mode, 2011 and 2012

	2011	2012	Difference
Mail Responses	8,389	7,297	-1,092
Internet Responses	2,149	3,068	+919
FAX and Email Responses	1,593	2,135	+542
Telephone Responses	10,570	7,121	-3,449
Total Responses	22,701	19,621	-3,080

With the nominal cost savings associated with moving respondents from mail to Internet reporting, a better option in the future, and one worth testing, would be to offer Internet reporting later during the collection cycle concentrating on reaching non-respondents and converting them to on-line reporting rather than offering it initially to all respondents and simply changing their collection mode without influencing their participation. (Dillman, Smythe, Christian, 2009.)

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