TO: Jennifer Park, Office of Management and Budget

FROM: Timothy Wojan   **DATE:** 8/19/2014

SUBJECT: OMB CONTROL NUMBER: 0536-0071
               Non-substantive changes to Rural Establishment Innovation Survey (REIS) main
               study contact protocol based on assessment of completed survey yields.

   This memo requests a non-substantive change to the REIS contact protocol that will add an
additional postcard reminder with web link as well as a total of 584 increased burden hours
associated with this change. The anticipated completion rates given study budget restrictions are
also discussed.   Although the anticipated completion rate is lower than that assumed in the
revised Supporting Statement, evidence from survey completions to date suggests that
assumptions regarding the prevalence of rare events (e.g. application for a patent) were too
conservative. Thus, there will be sufficient power to detect the effects (if they actually exist) of
the types of rare events that are of interest to this study given the anticipated completions based
on fielding results thus far.   However, the lower response rates do increase concerns regarding
nonresponse bias. Strategies to assess the seriousness of potential bias problems are discussed.

1) Change in contact protocol: A brief summary of REIS fielding results is reported in a
   table near the end of this memo. The AAPOR Response Rate 4 as of 7/31/14 was 18.3%.
   Since a large number of the web partial completes are fully usable other than the open
   ended comment section of the last question Response Rate 4 provides a realistic
   assessment of the response rate so far.   Telephone interviewing began on 7/7/14 and has
   been most effective in directing respondents to the web to complete the survey. The
   completion rate of respondent directed to the web has averaged between 15% and 20%.
   Given the modest productivity of telephone attempts to generate completes to date, a
   second postcard reminder (Attachment E) with web link is suggesting as the most
   efficient way to boost the response rate. The attached graph of cumulative daily
   completes provides evidence of a temporary increase in the completion rate after the first
   postcard reminder was sent out. The timing for the mailing would correspond with a
   decline in productiveness of telephone contact anticipated to happen in the last two weeks
   of August. The additional burden associated with a second mailing is assumed to be 1
   minutes per respondent mailed to the remaining noncontact sample of approximately
   35,000 for a total of 584 hours.
2) Given the 18.3% as of 7/31/14 and anticipated productivity of phone and web completes,
   it is unlikely that the response rate of approximately 30% assumed in the Supporting
   Statement will be achieved. The most optimistic projection would be that 17.5% of the
   remaining sample of approximately 35,000 would generate an additional 6,125 full or
   partial completes bringing the total to roughly 15,000. A minimum required sample size
   of approximately 17,000 was anticipated in the Supporting Statement.

   This minimum required sample size was estimated on the basis of testing for differences
   between rural and urban establishments with respect to rare events such as application for
   a patent. Examination of the data collected to date suggests that estimates of the rareness
   of these events—derived from European Union estimates of patenting in the services-

producing sectors—was too conservative. We originally assumed that 3.183% of urban establishment would apply for at least one patent over the past 3 years and that 2.4574% of rural establishments would apply for a patent. The closeness of these two estimates was based on the observed higher patent application rate of manufacturing firms and the higher concentration of manufacturing firms in rural areas. In fact, the patent application rate by urban respondents observed so far is 8.1% and 5.62% by rural respondents. Given these rates the current sample size will provide a powerful test:

The POWER Procedure
Pearson Chi-square Test for Two Proportions
Fixed Scenario Elements

Distribution	Asymptotic normal
Method	Normal approximation
Number of Sides	1
Null Proportion Difference	0
Group 1 Proportion	0.081
Group 2 Proportion	0.056
Group 1 Sample Size	2500
Group 2 Sample Size	5000
Alpha	0.05

Computed Power

Power

0.991

Testing the more challenging comparison of the awarded patent rate will also be possible with an increase in total sample size to 12,000:given preliminary estimates:

The POWER Procedure
Pearson Chi-square Test for Two Proportions
Fixed Scenario Elements

Distribution	Asymptotic normal
Method	Normal approximation
Number of Sides	1
Null Proportion Difference	0
Group 1 Proportion	0.045

Fixed Scenario Elements

Group 2 Proportion	0.035
Group 1 Sample Size	4000
Group 2 Sample Size	8000
Alpha	0.05

Computed Power

Power

0.842

3) The lower than expected response rate so far does not appear to be a threat to the statistical power of this study. The more serious problem a lower response rate presents is the potential introduction of serious nonresponse bias. We will conduct nonresponse bias analysis using three different components of the original and collected sample:

   a. Nonresponse analysis of the full original sample will provide information on substantive differences in response rates across strata (metro/nonmetro, establishment size class, and industry membership at the NAICS two digit level). In addition , the original sample also contains information on establishment age and detailed 6-digit NAICS codes. Examining detailed industry characteristics (e.g., skill intensity, import penetration, patenting rates, innovation rates, etc.) will provide additional critical information on whether particular establishment characteristics associated with industry membership are associated with nonresponse.

   b. Nonresponse analysis of the proprietary SSI (Dunn and Bradstreet) sample. In addition to the analysis conducted for the full sample, the SSI dataset contains addition information on sales volume, establishment employment, company employment, and whether the establishment is part of a Fortune 1000 company.

   c. Analysis of refusal conversion survey data. Respondents who refused participating in the survey will have the opportunity to complete a brief 8 question survey. This instrument will provide explicit information on whether refusing establishments are substantially different than the responding sample.

AAPOR Outcome Rate Calculator	Rural Establishment Innovation Survey (REIS) Data Fielding Report		
Last update 07-31-2014	Final Disposition Codes	Category	Results
Interview (Category 1)			
Phone completes	1.1100	I	221
Mail completes	1.1200	I	3400
Web completes	1.1300	I	4218
Phone partial completes	1.2100	P	18
Mail partial completes	1.2200	P	0
Web partial completes	1.2300	P	1215
Eligible, non-interview (Category 2)	2.0000		
Refusal and breakoff	2.1000	RF	261
Refusal	2.1100	RF	2269
Non-contact	2.2000	NC	11175
Respondent never available	2.2100	NC	21
Answering machine household-no message left	2.2210	NC	1678
Answering machine household-message left	2.2220	NC	7659
Deceased respondent	2.3100	O	2
Physically or mentally unable/incompetent	2.3200	O	7
Language problem	2.3300	O	26
Unknown eligibility, non-interview (Category 3)	3.0000		
Always busy	3.1200	UH	215
No answer	3.1300	UH	2911
Call blocking	3.1500	UH	102
Not yet called	3.2300	UO	15484
Not eligible (Category 4)	4.0000		
Fax/data line	4.2000	NW	240
Non-working number	4.3100	NW	9
Disconnected number	4.3200	NW	699
Temporarily out of service	4.3300	NW	597
Number changed	4.4100	NW	317
No eligible respondent	4.7000	IE	420
Other	4.9100	OT	48
Duplicates	4.9200	OT	4
Total phone numbers used			53216
I=Complete Interviews (1.1)			7839
P=Partial Interviews (1.2)			1233
R=Refusal and break off (2.1)			2530
NC=Non Contact (2.2)			20533
O=Other (2.0, 2.3)			35
e is the estimated proportion of cases of unknown eligibility that are eligible.			0.932
UH=Unknown Household (3.1)			3228
UO=Unknown other (3.2-3.9)			15484
Response Rate 1	I / (I + P) + (R + NC + O) + (UH + UO)		15.4%
Response Rate 2	(I + P) / (I + P) + (R + NC + O) + (UH + UO)		17.8%

Response Rate 3	I / ((I + P) + (R + NC + O) + e(UH + UO))	15.8%
Response Rate 4	(I + P) / ((I + P) + (R + NC + O) + e(UH + UO))	18.3%
Cooperation Rate 1	I / (I + P) + R + O)	67.4%
Cooperation Rate 2	(I + P) / ((I + P) + R + 0))	78.0%
Cooperation Rate 3	I / ((I + P) + R))	67.6%
Cooperation Rate 4	(I + P) / ((I + P) + R))	78.2%
Refusal Rate 1	R / ((I + P) + (R + NC + O) + UH + UO))	5.0%
Refusal Rate 2	R / ((I + P) + (R + NC + O) + e(UH + UO))	5.1%
Refusal Rate 3	R / ((I + P) + (R + NC + O))	7.9%
Contact Rate 1	(I + P) + R + O / (I + P) + R + O + NC + (UH + UO)	22.9%
Contact Rate 2	(I + P) + R + O / (I + P) + R + O + NC + e(UH + UO)	23.5%
Contact Rate 3	(I + P) + R + O / (I + P) + R + O + NC	36.2%

Cumulative completes by day and contact sequence