Is it Helpful to Include QR Codes on Mail Contact Materials for Self-Administered Web Surveys?

Federal Committee on Statistical Methodology
Research and Policy Conference
Hyattsville, MD
October 23, 2024

Research Triangle Institute (RTI) International:
Taylor Lewis[1], Nicole Lee, Dain Palmer, Naomi Freedner[2]

Chicago Department of Public Health[3]:
Hannah Matzke, Nik Prachand

[1] Corresponding author
[2] Now with National Opinion Research Center (NORC)
[3] The conclusions in the paper are those of the authors and do not necessarily represent the views of the Chicago Department of Public Health.

RTI International is a registered trademark and a trade name of Research Triangle Institute.

Outline

I. Background
   - Brief literature review on QR Codes in surveys
   - Healthy Chicago Survey (HCS)

II. Description of 2023 HCS QR Code Experiment

III. Results

IV. Discussion

Background on Quick Response (QR) Codes

- We have now come to expect QR codes in various places, such as sign-up sheets, advertisements, restaurant menus, etc.

- Survey practitioners have increasingly adopted use of QR codes on contact materials for web-based surveys

- Convenience factor: survey's URL and unique log-in information can be embedded, enabling respondent to immediately begin survey

- An estimated 90% of U.S. adult population owns a smartphone (Gelles-Watnick, 2024)

Literature on QR Codes is Mixed

- Lugtig and Luiten (2021) found including a QR code led to:
  - Higher rates of smartphone completes
  - Higher breakoff rate
  - No clear response rate (RR) differences

- Other studies have found inconclusive impact on RRs:
  - Marlar (2018) – no RR differences
  - Smith (2017) – slight RR decrease with QR codes
  - Endres et al. (2024) – QR codes increased RR 1.2 percentage points

Background on the HCS

- First launched in 2014 by the Chicago Department of Public Health
- Data used to shape policy and develop/support a variety of public health interventions
- Initially launched as an RDD telephone survey; transitioned to a self-administered mail contact survey using ABS frame in 2020 (Unangst et al., 2022)
- 1.2M Chicago addresses stratified into 77 community areas (CAs); next birthday method used to have an adult complete survey (Olson et al., 2014)
- 4,500-5,000 completes targeted annually, with at least 35 in each CA

Prior QR Code Research in HCS

- Lee et al. (2023) examined data from the natural experiment occurring in HCS whereby QR codes were first introduced in 2022 for full sample

- Examining results in the 2021 and 2022 HCS administrations, Lee et al. found results concomitant with Lugtig and Luiten (2021):
  - QR codes increased rate of completion by smartphone
  - QR codes led to 2x increase in breakoff rate
  - No statistically significant difference in RRs

- Goal was to conduct a randomized experiment in 2023 HCS administration to examine impact of QR codes on device, RRs, and survey variable distributions

2023 HCS Data Collection Protocol

- Sequential choice+ web/paper mixed-mode design (Lewis et al., 2022)
  - $2 pre-incentive
  - $30 post-incentive for web complete
  - $20 post-incentive for paper complete

- Two subsequent sample releases, each with four mail contact attempts

Mailing	Day
1. Web Invitation Letter	0
2. Reminder Self-Mailer	7
3. Paper Survey Packet + Web Invitation Letter	21
4. Reminder Self-Mailer	28

- 50/50 split in 2023 HCS second sample: QR codes present vs. excluded

QR Code vs. No QR Code Conditions: Mailing 1

CDPH
Chicago Department of Public Health

70000536_302_6197

6197 T26 P1 ********AUTO**5-DIGIT 60626
CHICAGO RESIDENT
1708 W JUNEWAY TER APT 2I
CHICAGO, IL 60626-1023

Keep the $2, as a thank you for your help.

Dear Fellow Chicagoan:

Congratulations, you've been selected to participate in the Healthy Chicago Survey! By completing this survey, you will help the Chicago Department of Public Health (CDPH) learn about the health of people in **your** neighborhood and how to make things better. For example, your information will help CDPH create programs to reduce smoking, improve access to health services, and ensure all Chicagoans can get healthy food. The survey should be completed by an adult in your household who had the most recent birthday. We have included $2 in this envelope as a thank you for your help.

The survey is easy and may be completed online in one of two ways:

Scan the QR code with your Phone's camera:

OR

Go to:
www.HealthyChicagoSurvey.org

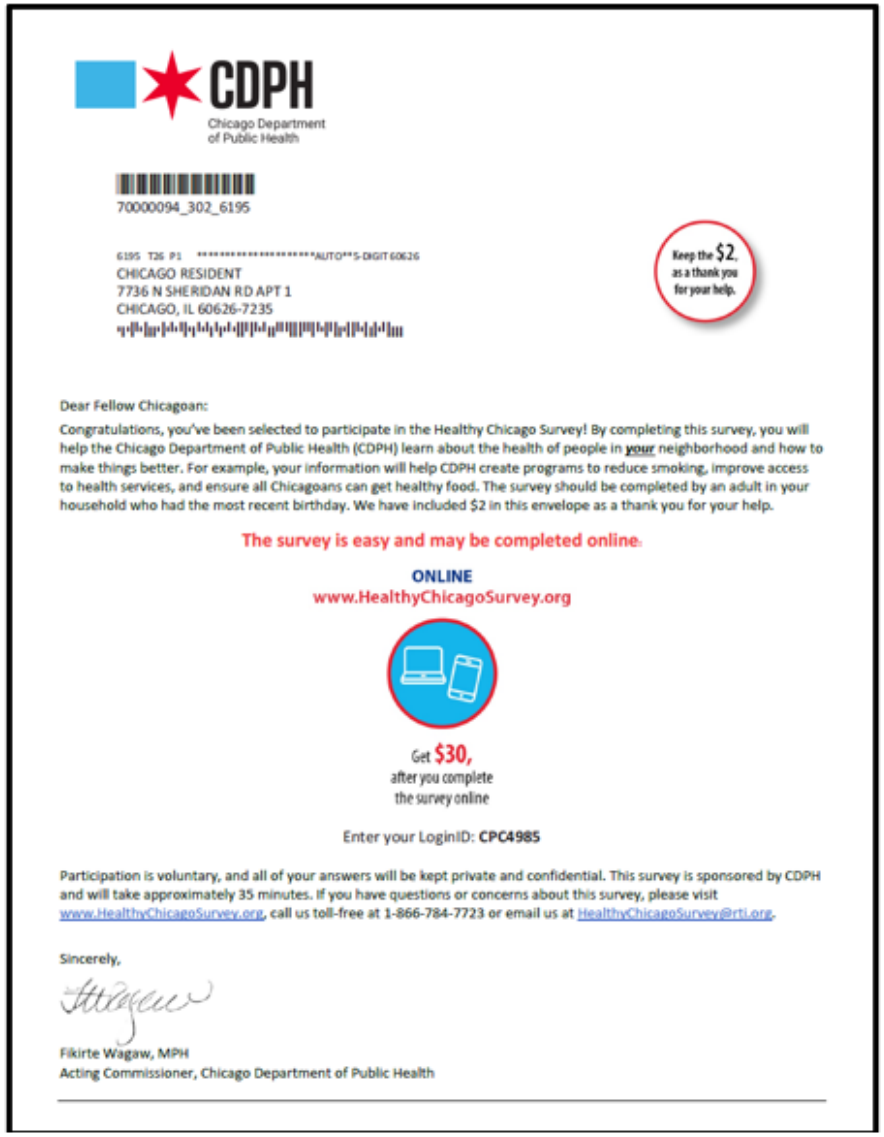
Enter your LoginID:
EXH4775

Get $30 after you complete the survey online!

Participation is voluntary, and all of your answers will be kept private and confidential. This survey is sponsored by CDPH and will take approximately 35 minutes. If you have questions or concerns about this survey, please visit www.HealthyChicagoSurvey.org, call us toll-free at 1-866-784-7723 or email us at HealthyChicagoSurvey@rti.org.

Sincerely,

Fikirte Wagaw, MPH
Acting Commissioner, Chicago Department of Public Health



CDPH
Chicago Department of Public Health

70000094_302_6195

6195 T26 P1 ********AUTO**5-DIGIT 60626
CHICAGO RESIDENT
7736 N SHERIDAN RD APT 1
CHICAGO, IL 60626-7235

Keep the $2, as a thank you for your help.

Dear Fellow Chicagoan:

Congratulations, you've been selected to participate in the Healthy Chicago Survey! By completing this survey, you will help the Chicago Department of Public Health (CDPH) learn about the health of people in **your** neighborhood and how to make things better. For example, your information will help CDPH create programs to reduce smoking, improve access to health services, and ensure all Chicagoans can get healthy food. The survey should be completed by an adult in your household who had the most recent birthday. We have included $2 in this envelope as a thank you for your help.

The survey is easy and may be completed online.

ONLINE
www.HealthyChicagoSurvey.org

Get $30, after you complete the survey online

Enter your LoginID: **CPC4985**

Participation is voluntary, and all of your answers will be kept private and confidential. This survey is sponsored by CDPH and will take approximately 35 minutes. If you have questions or concerns about this survey, please visit www.HealthyChicagoSurvey.org, call us toll-free at 1-866-784-7723 or email us at HealthyChicagoSurvey@rti.org.

Sincerely,

Fikirte Wagaw, MPH
Acting Commissioner, Chicago Department of Public Health

QR Code vs. No QR Code Conditions: Mailing 2

CDPH
Chicago Department of Public Health

A few days ago, we mailed you an envelope containing $2 in cash and an invitation to complete an important survey. If you already completed the survey – *thank you*. If not, please complete your survey today.

The survey is easy and may be completed online in one of two ways:

Scan the QR code with your Phone's camera:

OR

Go to: **www.HealthyChicagoSurvey.org**

Enter your LoginID: **ZYB4527**

Get $30, after you complete the survey online!

Hace unos días, le enviamos por correo un sobre blanco grande que contenía $2 dólares en efectivo y una invitación para completar una encuesta importante. Si ya completó la encuesta, – *gracias*. Si no lo ha hecho, complete su encuesta hoy.

La encuesta es fácil y se puede completar por internet de una de dos maneras:

Escaneé el código QR con la cámara de su teléfono:

O

Vaya a: **www.HealthyChicagoSurvey.org**

Ingrese su identificación de inicio de sesión: **ZYB4527**

Reciba $30 después de completar la encuesta por Internet!

If you have questions or concerns about this survey, please visit www.HealthyChicagoSurvey.org, call us toll-free at 1-866-784-7723 or email us at HealthyChicagoSurvey@rti.org.

Si tiene preguntas o inquietudes sobre esta encuesta, puede visitar la página de Internet www.HealthyChicagoSurvey.org, puede llamarnos gratis al 1-866-784-7723 o puede enviarnos un mensaje electrónico a HealthyChicagoSurvey@rti.org.

Many thanks,
Muchas gracias,

Fikirte Wagaw, MPH
Acting Commissioner,
Chicago Department of Public Health
Comisionada Interina,
Departamento de Salud Pública de Chicago

CDPH
Chicago Department of Public Health

A few days ago, we mailed you an envelope containing $2 in cash and an invitation to complete an important survey. If you already completed the survey – *thank you*. If not, please complete your survey today.

The survey is easy and may be completed online:

ONLINE
www.HealthyChicagoSurvey.org

Enter your LoginID: **HRM3599**

Get $30, after you complete the survey online

Hace unos días, le enviamos por correo un sobre blanco grande que contenía $2 dólares en efectivo y una invitación para completar una encuesta importante. Si ya completó la encuesta, – *gracias*. Si no lo ha hecho, complete su encuesta hoy.

La encuesta es fácil y se puede completar por internet:

POR INTERNET
www.HealthyChicagoSurvey.org

Ingrese su identificación de inicio de sesión: **HRM3599**

Reciba $30 después de completar la encuesta por Internet

If you have questions or concerns about this survey, please visit www.HealthyChicagoSurvey.org, call us toll-free at 1-866-784-7723 or email us at HealthyChicagoSurvey@rti.org.

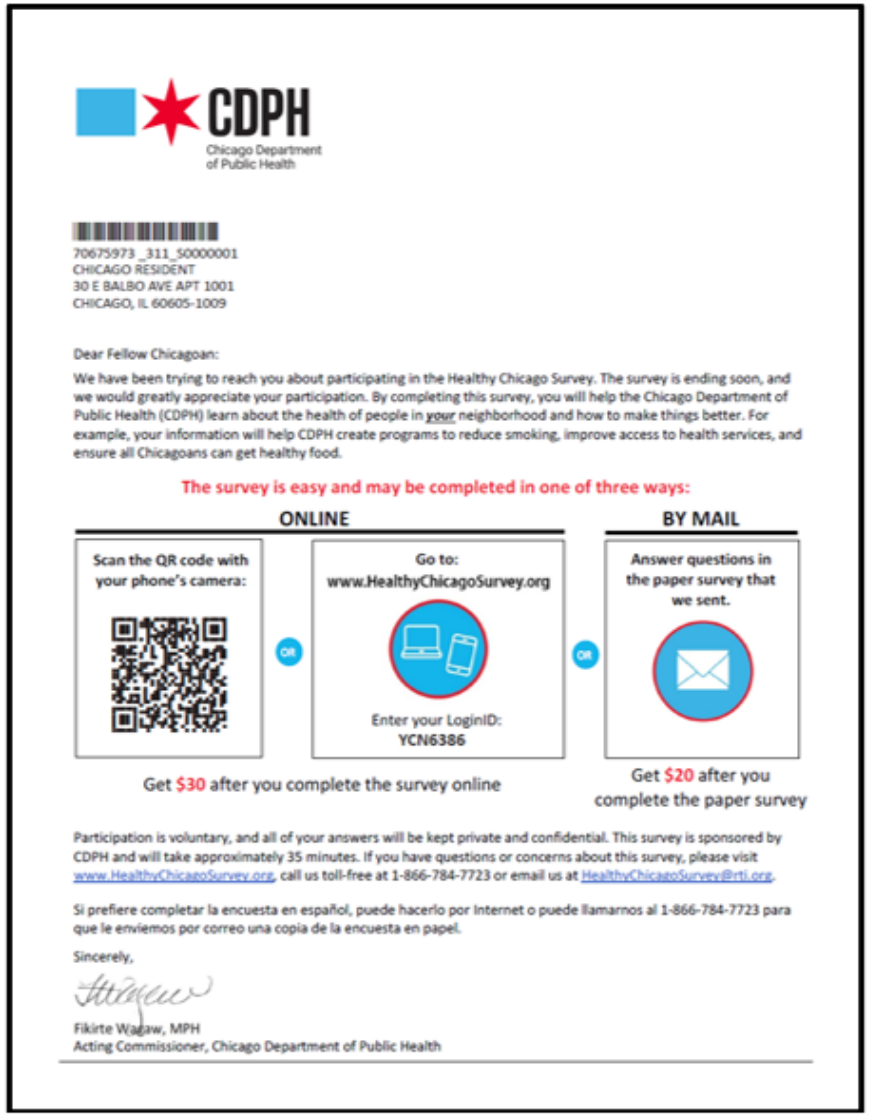
Si tiene preguntas o inquietudes sobre esta encuesta, puede visitar la página de Internet www.HealthyChicagoSurvey.org, puede llamarnos gratis al 1-866-784-7723 o puede enviarnos un mensaje electrónico a HealthyChicagoSurvey@rti.org.

Many thanks,
Muchas gracias,

Fikirte Wagaw, MPH
Acting Commissioner,
Chicago Department of Public Health
Comisionada Interina,
Departamento de Salud Pública de Chicago

CDPH
Chicago Department of Public Health

QR Code vs. No QR Code Conditions: Mailing 3



CDPH
Chicago Department of Public Health

70675973 _311_S0000001
CHICAGO RESIDENT
30 E BALBO AVE APT 1001
CHICAGO, IL 60605-1009

Dear Fellow Chicagoan:

We have been trying to reach you about participating in the Healthy Chicago Survey. The survey is ending soon, and we would greatly appreciate your participation. By completing this survey, you will help the Chicago Department of Public Health (CDPH) learn about the health of people in *your* neighborhood and how to make things better. For example, your information will help CDPH create programs to reduce smoking, improve access to health services, and ensure all Chicagoans can get healthy food.

The survey is easy and may be completed in one of three ways:

ONLINE

Scan the QR code with your phone's camera:

OR

Go to: www.HealthyChicagoSurvey.org

Enter your LoginID: YCN6386

OR

BY MAIL

Answer questions in the paper survey that we sent.

Get $30 after you complete the survey online

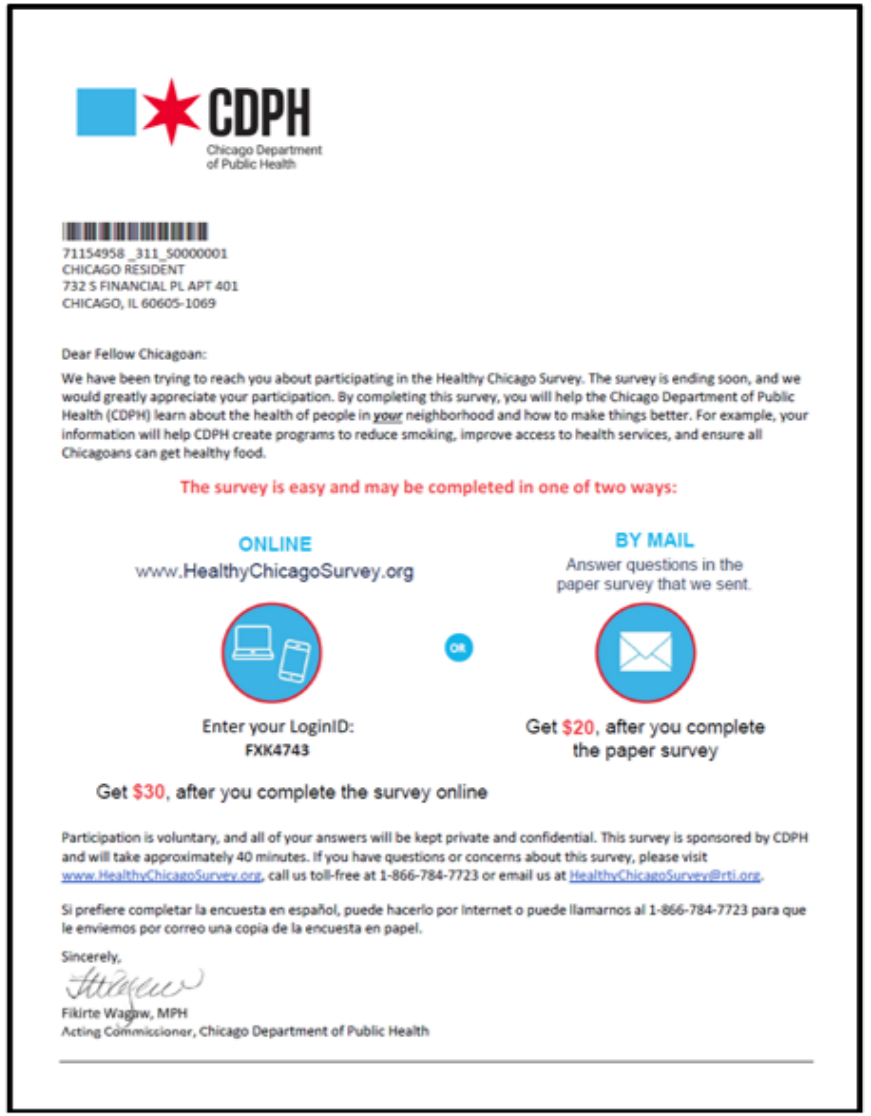
Get $20 after you complete the paper survey

Participation is voluntary, and all of your answers will be kept private and confidential. This survey is sponsored by CDPH and will take approximately 35 minutes. If you have questions or concerns about this survey, please visit www.HealthyChicagoSurvey.org, call us toll-free at 1-866-784-7723 or email us at HealthyChicagoSurvey@rti.org.

Si prefiere completar la encuesta en español, puede hacerlo por Internet o puede llamarnos al 1-866-784-7723 para que le enviemos por correo una copia de la encuesta en papel.

Sincerely,

Fikirte Wagaw, MPH
Acting Commissioner, Chicago Department of Public Health



CDPH
Chicago Department of Public Health

71154958 _311_S0000001
CHICAGO RESIDENT
732 S FINANCIAL PL APT 401
CHICAGO, IL 60605-1069

Dear Fellow Chicagoan:

We have been trying to reach you about participating in the Healthy Chicago Survey. The survey is ending soon, and we would greatly appreciate your participation. By completing this survey, you will help the Chicago Department of Public Health (CDPH) learn about the health of people in *your* neighborhood and how to make things better. For example, your information will help CDPH create programs to reduce smoking, improve access to health services, and ensure all Chicagoans can get healthy food.

The survey is easy and may be completed in one of two ways:

ONLINE

www.HealthyChicagoSurvey.org

Enter your LoginID: FXK4743

OR

BY MAIL

Answer questions in the paper survey that we sent.

Get $20, after you complete the paper survey

Get $30, after you complete the survey online

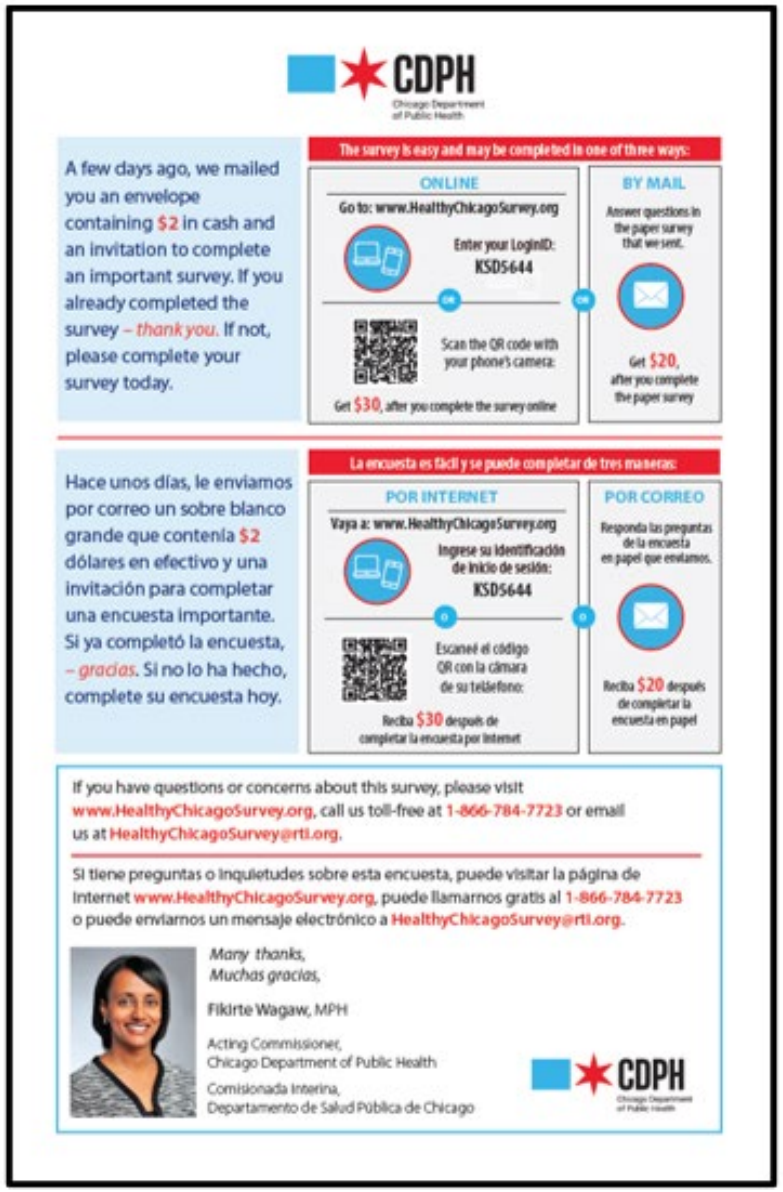
Participation is voluntary, and all of your answers will be kept private and confidential. This survey is sponsored by CDPH and will take approximately 40 minutes. If you have questions or concerns about this survey, please visit www.HealthyChicagoSurvey.org, call us toll-free at 1-866-784-7723 or email us at HealthyChicagoSurvey@rti.org.

Si prefiere completar la encuesta en español, puede hacerlo por Internet o puede llamarnos al 1-866-784-7723 para que le enviemos por correo una copia de la encuesta en papel.

Sincerely,

Fikirte Wagaw, MPH
Acting Commissioner, Chicago Department of Public Health

QR Code vs. No QR Code Conditions: Mailing 4



CDPH
Chicago Department of Public Health

A few days ago, we mailed you an envelope containing $2 in cash and an invitation to complete an important survey. If you already completed the survey – *thank you*. If not, please complete your survey today.

The survey is easy and may be completed in one of three ways:

ONLINE
Go to: www.HealthyChicagoSurvey.org
Enter your LoginID: KSD5644
OR
Scan the QR code with your phone's camera:
Get $30, after you complete the survey online

OR

BY MAIL
Answer questions in the paper survey that we sent.
Get $20, after you complete the paper survey

Hace unos días, le enviamos por correo un sobre blanco grande que contenía $2 dólares en efectivo y una invitación para completar una encuesta importante. Si ya completó la encuesta, – *gracias*. Si no lo ha hecho, complete su encuesta hoy.

La encuesta es fácil y se puede completar de tres maneras:

POR INTERNET
Vaya a: www.HealthyChicagoSurvey.org
Ingrese su identificación de inicio de sesión: KSD5644
O
Escaneé el código QR con la cámara de su teléfono:
Reciba $30 después de completar la encuesta por Internet

O

POR CORREO
Responda las preguntas de la encuesta en papel que enviamos.
Reciba $20 después de completar la encuesta en papel

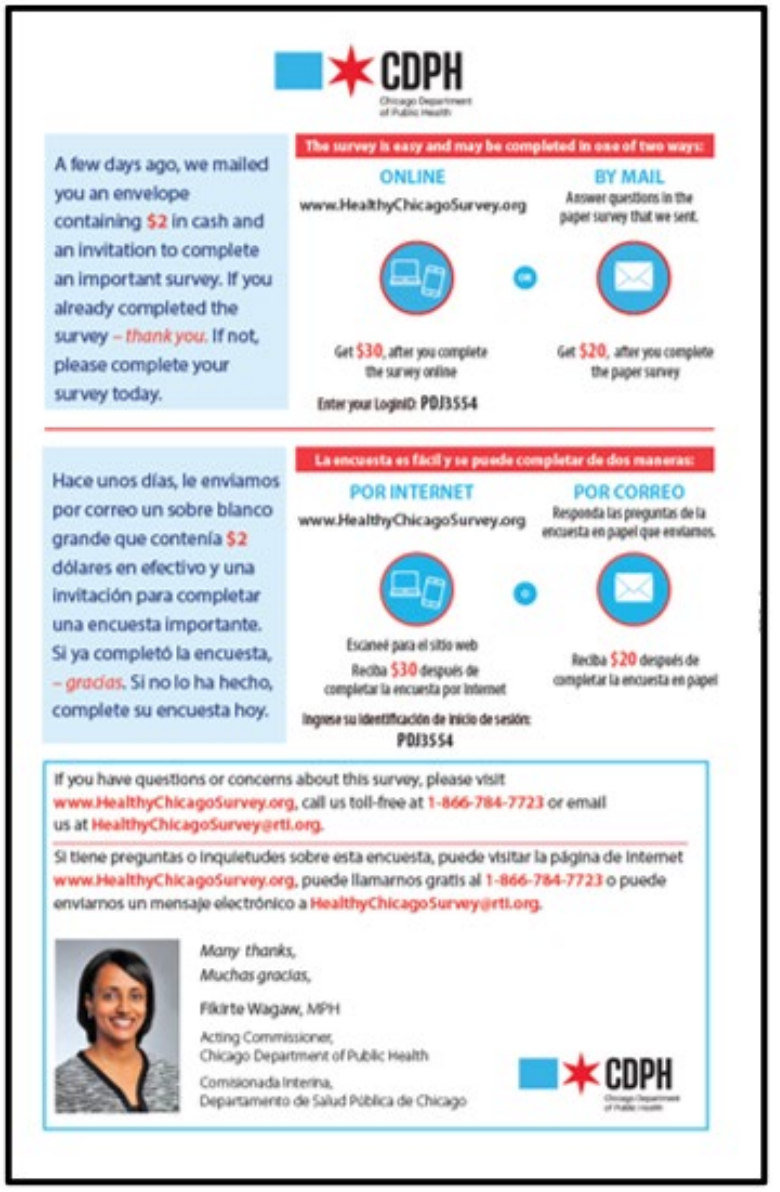
If you have questions or concerns about this survey, please visit www.HealthyChicagoSurvey.org, call us toll-free at 1-866-784-7723 or email us at HealthyChicagoSurvey@rti.org.

Si tiene preguntas o inquietudes sobre esta encuesta, puede visitar la página de Internet www.HealthyChicagoSurvey.org, puede llamarnos gratis al 1-866-784-7723 o puede enviarnos un mensaje electrónico a HealthyChicagoSurvey@rti.org.

Many thanks,
Muchas gracias,

Fikirte Wagaw, MPH
Acting Commissioner,
Chicago Department of Public Health
Comisionada Interina,
Departamento de Salud Pública de Chicago

CDPH
Chicago Department of Public Health



CDPH
Chicago Department of Public Health

A few days ago, we mailed you an envelope containing $2 in cash and an invitation to complete an important survey. If you already completed the survey – *thank you*. If not, please complete your survey today.

The survey is easy and may be completed in one of two ways:

ONLINE
www.HealthyChicagoSurvey.org
Get $30, after you complete the survey online
Enter your LoginID: PDJ3554

OR

BY MAIL
Answer questions in the paper survey that we sent.
Get $20, after you complete the paper survey

Hace unos días, le enviamos por correo un sobre blanco grande que contenía $2 dólares en efectivo y una invitación para completar una encuesta importante. Si ya completó la encuesta, – *gracias*. Si no lo ha hecho, complete su encuesta hoy.

La encuesta es fácil y se puede completar de dos maneras:

POR INTERNET
www.HealthyChicagoSurvey.org
Escaneé para el sitio web
Reciba $30 después de completar la encuesta por Internet
Ingrese su identificación de inicio de sesión: PDJ3554

O

POR CORREO
Responda las preguntas de la encuesta en papel que enviamos.
Reciba $20 después de completar la encuesta en papel

If you have questions or concerns about this survey, please visit www.HealthyChicagoSurvey.org, call us toll-free at 1-866-784-7723 or email us at HealthyChicagoSurvey@rti.org.

Si tiene preguntas o inquietudes sobre esta encuesta, puede visitar la página de Internet www.HealthyChicagoSurvey.org, puede llamarnos gratis al 1-866-784-7723 o puede enviarnos un mensaje electrónico a HealthyChicagoSurvey@rti.org.

Many thanks,
Muchas gracias,

Fikirte Wagaw, MPH
Acting Commissioner,
Chicago Department of Public Health
Comisionada Interina,
Departamento de Salud Pública de Chicago

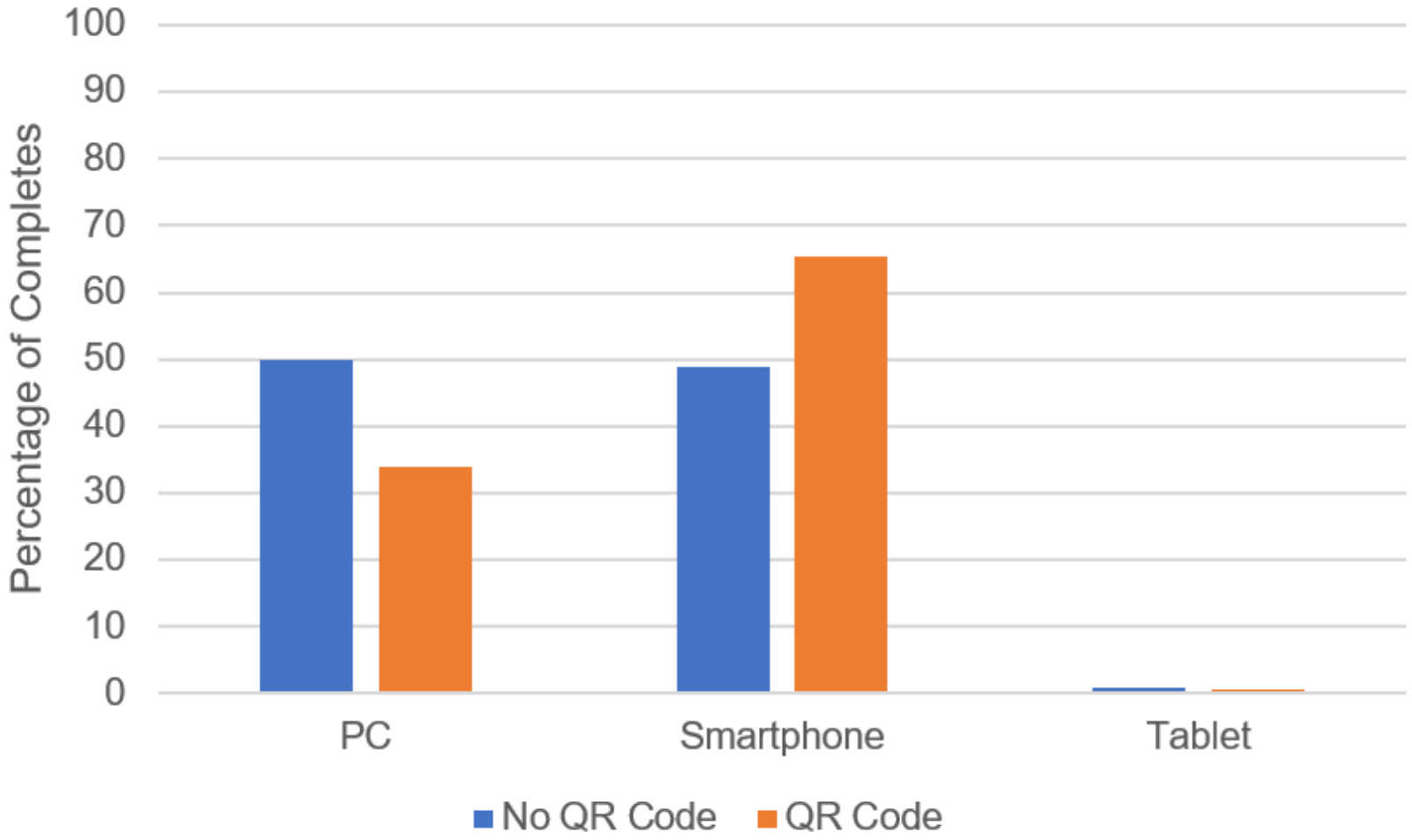
CDPH
Chicago Department of Public Health

QR Code Experiment Results: Dispositions

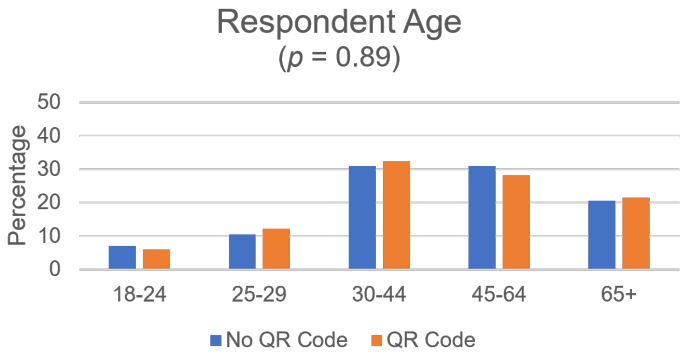
- Figures of note:
  - QR codes increase web participation slightly (93.8% vs. 92.1%)
  - QR codes decrease yield rate slightly (21.9% vs. 22.4%); AAPOR RR3 one percentage point lower (29.4% vs. 30.4%)
  - More breakoffs (i.e., partial completes) in QR codes condition (3.1% vs. 1.8%)

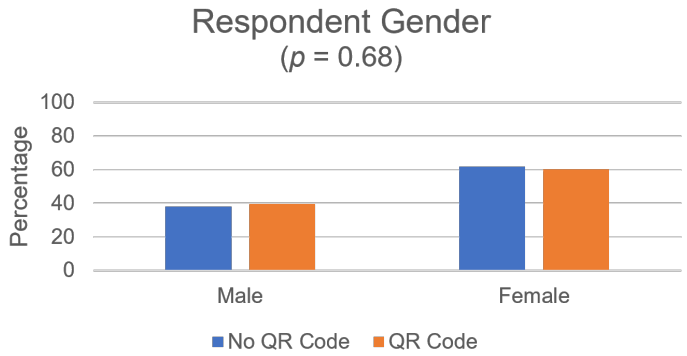
		No QR Code			QR Code	
Code	**Meaning**	**Count**	**Base-Weighted Percent**		**Count**	**Base-Weighted Percent**
CW	Complete by Web	1,237	20.6		1,211	20.5
CP	Complete by Paper	117	1.8		96	1.4
PW	Partial Complete by Web	122	1.8		218	3.1
PP	Partial Complete by Paper	2	0.0		2	0.0
UD	Undeliverable	581	8.7		577	8.6
RF	Explicit Refusal	2	0.0		1	0.0
NR	Nonrespondent – Unknown Eligibility	4,368	67.0		4,324	66.3
		6,429	100.0		6,429	100.0

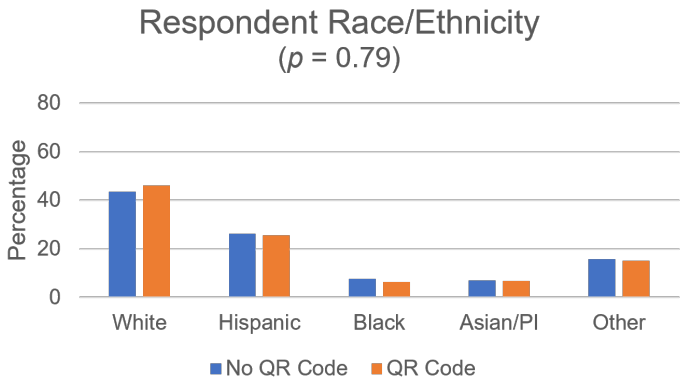
QR Code Experiment Results: Device Type

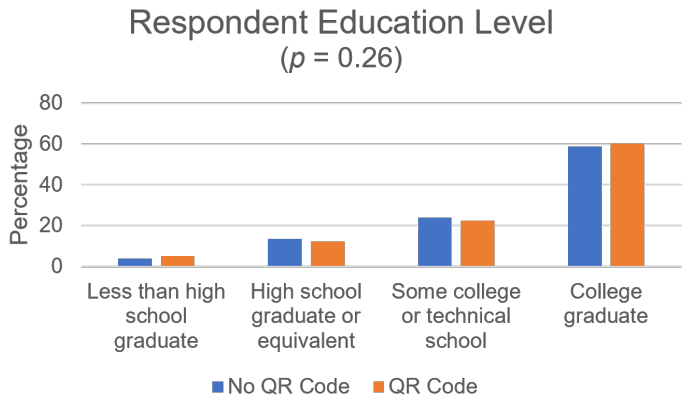


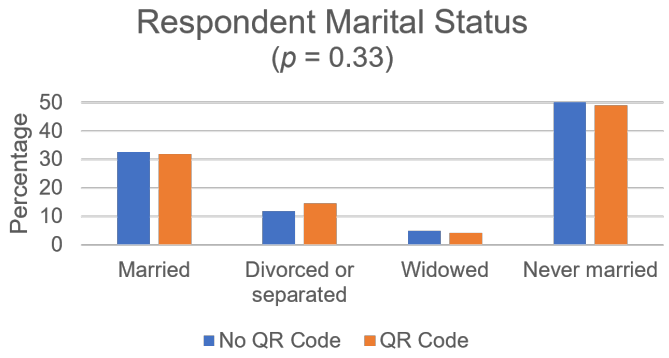
QR Code Experiment Results: Base-Weighted Sociodemographics

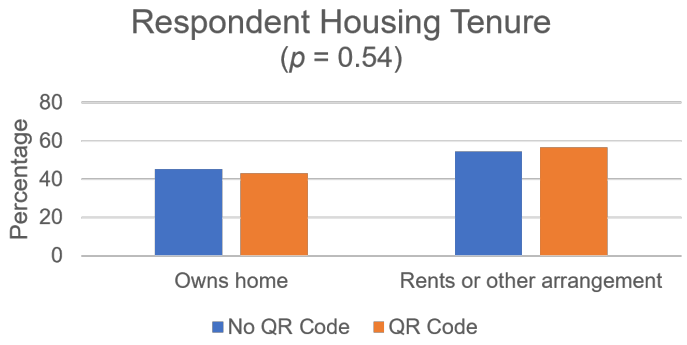




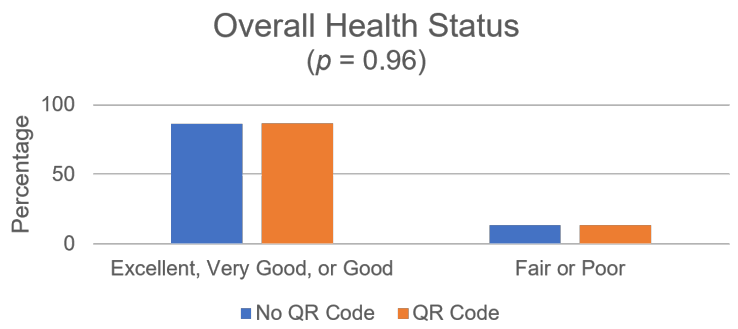


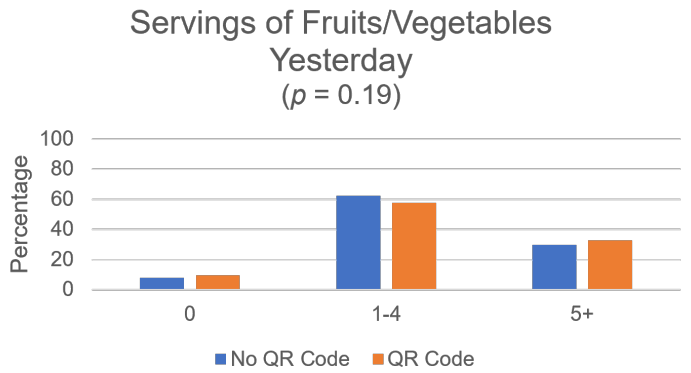


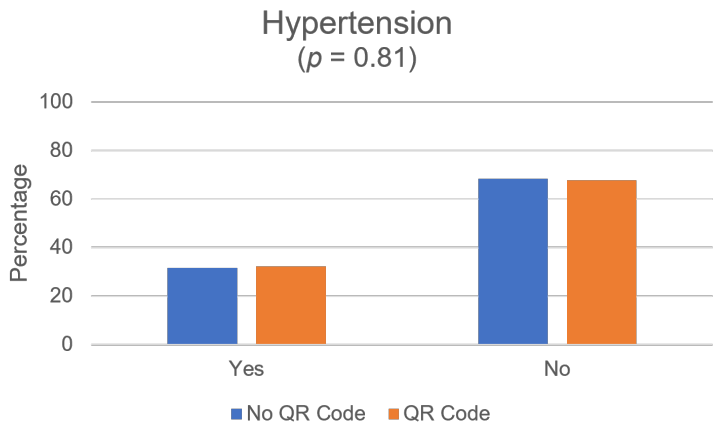


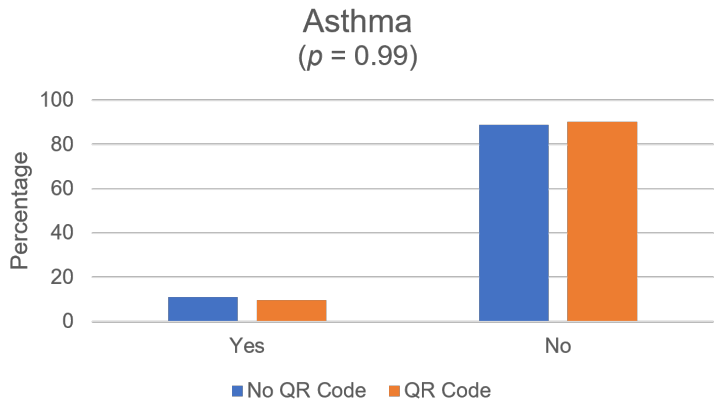


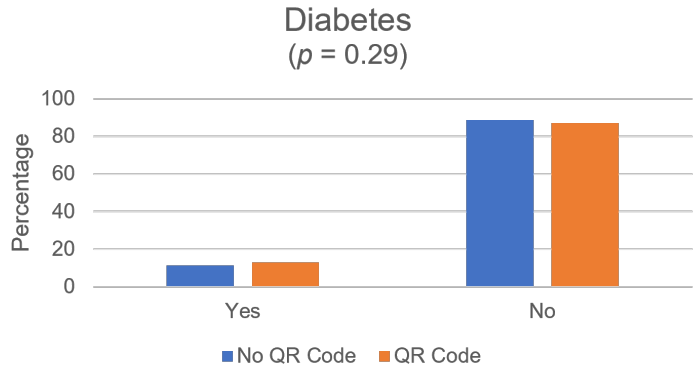
QR Code Experiment Results: Weighted Outcomes

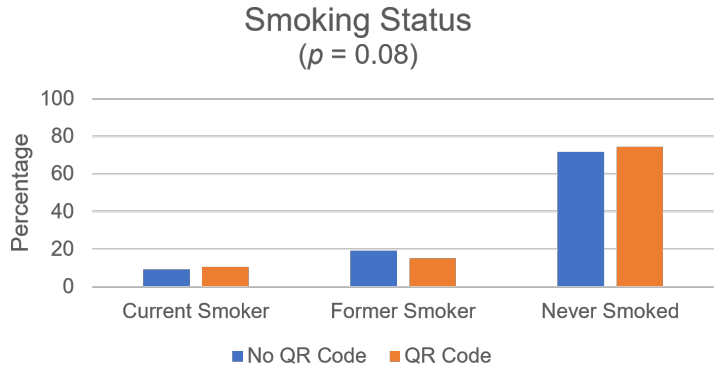












Summary

Key Takeaways:

- QR codes increase rate of web participation (good thing), but…
- Higher rate of smartphone completes (good thing?)
- Higher rate of breakoffs (good thing?)
- No substantive RR differences
- No substantive differences in sociodemographic variables
- No substantive differences in key health outcomes

Limitations:

- In general, results may be sensitive to contact materials design and/or placement of QR code
- One health survey in one city with a sequential Choice+ web/paper data collection protocol – different results with web-only survey?

References

Endres, K., Heiden E., Park K., Losch M., Harland K., Abbott A. 2024. Experimenting with QR Codes and Envelope Size in Push-to-Web Surveys, *Journal of Survey Statistics and Methodology*, 12, 893–905, https://doi.org/10.1093/jssam/smad008

Gelles-Watnick R. 2024. Americans' use of mobile technology and home broadband. Pew Research Center Report. https://www.pewresearch.org/wp-content/uploads/sites/20/2024/01/PI_2024.01.31_Home-Broadband-Mobile-Use_FINAL.pdf.

Lee N., Lewis T., Scott L., Prachand N., Singh M., Matzke H. 2023. The use of QR codes to increase rate of survey participation in a web survey. Presentation given at the annual conference of the American Association for Public Opinion Research. Philadelphia, PA.

Lewis T., Freedner N., Looby C. 2022. An experiment comparing concurrent and sequential choice+ mixed-mode data collection protocols in a self-administered health survey. *Survey Methods: Insights from the Field*. https://surveyinsights.org/?p=17134.

Lugtig P., Luiten A. 2021. Do shorter stated survey length and inclusion of a QR code in an invitation letter lead to better response rates? *Survey Methods: Insights from the Field*. https://surveyinsights.org/?p=14216.

Marlar J. 2018. Do quick response codes enhance or hinder surveys? Gallup Methodology Blog.
https://news.gallup.com/opinion/methodology/241808/quick-response-codes-enhance-hinder-surveys.aspx.

Olson, K., Stange, M., Smyth J. 2014. "Assessing Within-Household Selection Methods in Household Mail Surveys." *Public Opinion Quarterly*, 78, 656-678.

Smith P. 2017. An experimental examination of methods for increasing response rates in a push-to-web survey of sport participation. Paper presented at the 28th Workshop on Person and Household Nonresponse. Utrecht, the Netherlands.

Unangst, J., Lewis T., Laflamme E., Prachand N., Weaver K. 2022. "Transitioning the Healthy Chicago Survey from a Telephone Mode to Self-Administered by Mail Mode." *Journal of Public Health Management & Practice*, 28, 309-316.

Contact Information

Thanks!

Questions/Comments?

THLewis@rti.org