

# **Assessment for the *Be Antibiotics Aware* Consumer and Healthcare Professional Campaign**

Request for OMB approval of a New Information Collection:  
OMB 0920-XXXX

9/28/2022

## **Supporting Statement A**

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- **Goal of the study:** To assess if the *Be Antibiotics Aware (BAA)* pilot media campaign, along with partner outreach over a 2–3-month period in select markets, successfully reached intended consumer and healthcare professional (HCP) audiences and influenced their knowledge, awareness, and behavior related to appropriate antibiotic use and prescribing.
- **Intended use of the resulting data:** The information will be used to inform future refinement and implementation of the *BAA* pilot campaign materials and tactics. The CDC may also use this information to inform resource needs for future *BAA* campaign activities.
- **Methods to be used to collect data:** Individuals who have opted to be contacted for surveys (survey panels) will be screened for eligibility based on the inclusion/exclusion criteria for participation. Qualified participants who sign a consent form will be given access to an online survey and the data collected will be de-identified before proceeding with data sharing and analysis.
- **The subpopulation to be studied:** Three consumer groups include (1) healthy adults who visit urgent care, ages 18-64, (2) community-dwelling older adults, ages 65+, and (3) family caregivers of nursing home (long-term care) residents. Five HCP groups include (1) hospitalists (2) dentists, (3) community pharmacists, (4) physicians and advanced practice providers in nursing homes, and (5) nurses in nursing homes.
- **How data will be analyzed:** The data will be analyzed using the Statistical Package for the Social Sciences (SPSS) to determine changes in awareness, knowledge, and behavior between the two independent groups (pre versus post campaign) and between exposed versus unexposed to the *BAA* media campaign and partner outreach.
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## 1. Circumstances Making the Collection of Information Necessary

The Centers for Disease Control and Prevention’s (CDC), National Center for Emerging and Zoonotic Infectious Diseases (NCEZID), Division of Healthcare Quality Promotion (DHQP) requests a three-year approval for a new information collection titled “Assessment of the *Be Antibiotics Aware* Consumer and Healthcare Professional Campaign.” This one-time data collection will assess the reach and appeal of the *Be Antibiotics Aware (BAA)* campaign messaging and partner outreach in select markets and examine differences in antibiotic knowledge, awareness, beliefs, and behavioral intentions among consumer and healthcare professional (HCP) audiences who have and have not been exposed to the *BAA* messaging. The data collection activities proposed in this new information collection request will allow CDC to capture critical information needed to inform refinement and implementation of the *BAA* campaign (materials and tactics).

### Background

Antibiotic resistance (AR) is one of the most urgent threats to public health in the U.S. (CDC, 2021d). Antibiotic resistant bacteria have grown more virulent, prevalent, and diverse and can spread between human and animals (Center for Disease Dynamics, Economics & Policy, 2016). Each year there are

more than 2.8 million antibiotic-resistant infections in the U.S. and 35,000 individuals die as a result (CDC, 2021d). At least 30 percent of antibiotics prescribed to outpatients and emergency departments are unnecessary which amounts to 47 million excess prescriptions per year (CDC, 2016; CDC, 2021c, 2021d; Teixeira Rodrigues et al., 2013). One of the main side effects of taking antibiotics is alteration of the microbiome which could lead to infections such as *Clostridioides difficile* (or *C.diff*), the inability to treat infections, prolonged illness, or even death (Langdon et al., 2016). Risk factors for AR include lack of knowledge, sub-therapeutic doses, excessive use, antibiotic residues, and incorrect storage (Regea,2018). In addition, there can be impacts on productivity, healthcare costs, and it can serve as a drain on the economy (Regea, 2018).

The *U.S. National Action Plan for Combating Antibiotic-Resistant Bacteria* calls for federal agencies to accelerate their response to AR and improve the health of all Americans (CDC, 2021e). The first National Action Plan released in 2015, set off with the goal to reduce inappropriate outpatient antibiotic use by 50 percent by 2020. CDC’s 2019 Antibiotic Resistance Threats Report (CDC, 2019) noted that dedicated prevention and infection control efforts in the U.S. reduced deaths from AR infections by 18 percent overall and by nearly 30 percent in hospitals. Although substantial progress has been made, CDC’s special report highlighting the impact of COVID-19 on AR in the U.S. found that much of that progress was lost, in large part, due to the effects of the pandemic. Infection prevention and control practices were especially impacted as well as specimen collection and testing to track resistant infections (CDC, 2022a, 2022b).

The updated *National Action Plan for Combating Antibiotic-Resistant Bacteria, 2020-2025*, calls for CDC to decrease healthcare-associated antibiotic-resistant infections by 20 percent by 2025 and community-acquired antibiotic-resistant infections by 10 percent by 2025 (Office of the Assistant Secretary for Planning and Evaluation, 2020). One way to decrease the use of unnecessary antibiotic prescriptions is through antibiotic stewardship programs such as CDC’s national *Be Antibiotics Aware* (BAA) educational campaign. The goals of the BAA campaign are to seek optimization of antibiotic prescribing and use, in order to improve patient safety and healthcare quality and to combat AR by raising knowledge and awareness, and motivating behavior change among consumer and HCP audiences. Helping HCPs improve the way they prescribe antibiotics, and improving the way consumers take antibiotics, is critical to effectively treat infections, and protect patients from harms caused by unnecessary antibiotic use, and combat AR (CDC, 2021a).

CDC is authorized to conduct these activities by the Public Health Service Act (42 U.S.C. 242), Section 301(a) (Attachment A).

## **2. Purpose and Use of Information Collection**

The purpose of this information collection (study) is to assess if the BAA campaign pilot assessment, including a large-scale paid media buy and partner promotion over a 2–3-month period, in select markets, successfully reached intended consumer and HCP audiences and influenced their knowledge, awareness, and behavior related to appropriate antibiotic use.

Consumer audiences are defined as individuals who have a higher risk of developing antibiotic-resistant infections, including (1) healthy adults who visit urgent care, ages 18-64, (2) community-dwelling older adults, ages 65+, and (3) family caregivers of nursing home (long-term care) residents. HCP audiences are defined as healthcare professionals who prescribe antibiotics, including (1) hospitalists (2) dentists, 3) community pharmacists, (4) physicians and advanced practice providers in nursing homes, and (5) nurses in nursing homes.

Data from this new information collection will provide insights into the effectiveness of the *BAA* campaign efforts. Without this data collection, CDC DHQP will not know if the *BAA* pilot campaign is effectively reaching and educating the intended audiences nor how to refine or refresh the campaigns messaging to improve clarity, receptivity, relevance, and effectiveness.

CDC will use the information obtained from this data collection in three primary ways: 1) to inform future refinement and implementation of the *BAA* campaign (materials and tactics); 2) to inform CDC and its partners who seek to combat AR about the potential effects of campaign messages among the intended audiences; and 3) to inform resource needs for future *BAA* campaign activities.

#### Overview of the data collection procedures

CDC has contracted with CATMEDIA, a program management, training, and creative services company, to design and implement the study. The study design was informed by key foundational activities, including a review of the literature and existing *BAA* materials and resources, the development of two logic models (consumer and HCP) an assessment framework, and guidance from CATMEDIA research experts and CDC DHQP AR subject matter experts, researchers, and program leaders.

A monitoring and evaluation plan, which includes evaluation questions and sub-questions that map to the two logic models, along with indicators that will be used to measure results, was developed to inform data collection, analysis, and reporting. Four survey instruments, namely the consumer surveys (pre-and-post campaign) and the HCP surveys (pre-and-post campaign), were developed to collect data from participants.

The overarching evaluation questions that will guide the study are:

- What are the extent and magnitude of *BAA* campaign pilot assessment reach among the intended audiences?
- What are the effects of *BAA* campaign pilot assessment on awareness of antibiotic use among the intended audiences?
- What impact did *BAA* campaign pilot assessment have on the intended audiences' knowledge, attitudes, beliefs, and behavior about appropriate antibiotic use?

CATMEDIA will subcontract with an online survey panel vendor (hereafter called vendor) to collect data from a sample of consumer audiences in Tennessee, Nebraska, and Iowa, (Table 1) and HCP audiences in Tennessee, Nebraska, Iowa, and Alabama (Table 2). Because HCPs are generally more difficult to recruit, one additional market (Alabama) is included for the HCP group. The priority markets

are based on media buy, budgeting, the presence of urban and rural populations across the recommended markets, and the feasibility of attaining the number of participants needed in this assessment.

The vendor will recruit individuals who match the intended audiences using their proprietary research panels. Individuals who consent and are deemed eligible to participate will be invited to participate in an online survey. The survey will be available in English only. Data will be collected from respondents in each subgroup at two different points in time– pre-campaign and post-campaign –using different participants in each time point (i.e., these are two independent groups).

Table 1. BAA Consumer Audiences and Select Markets

<b>Consumer audiences who have a higher risk of developing antibiotic-resistant infections</b>	<b>Tennessee (Southeast)</b>	<b>Nebraska (Midwest)</b>	<b>Iowa (Midwest)</b>
Healthy adults who visit urgent care, ages 18-64 (ages 18-64 for participants who live in IA & TN), and (ages 19-64 (for participants who live in NE)	X	X	X
Community dwelling older adults, 65+	X	X	X
Family caregivers (18+ for participants who live in IA & TN and 19+ for participants who live in NE) of nursing home (long-term care) residents.	X	X	X

Table 2. BAA HCP Audiences and Select Markets

<b>HCP audiences who prescribe antibiotics</b>	<b>Tennessee (Southeast)</b>	<b>Nebraska (Midwest)</b>	<b>Iowa (Midwest)</b>	<b>Alabama (Southeast)</b>
Hospitalists	X	X	X	X
Dentists	X	X	X	X
Community Pharmacists	X	X	X	X
Physicians and Advanced Practice Professionals in Nursing Homes	X	X	X	X
Nurses in Nursing Homes	X	X	X	X

Following the pre-campaign data collection, CDC will launch the *BAA* pilot media campaign and partner outreach within the priority markets for a period of 2-3 months. Campaign materials may include but are not limited to fact sheets, brochures, prescription pads, and public service announcements. The avenues for distribution of the campaign materials and messages to the intended audiences may include, but are not limited to earned media, paid media, social media, and direct partner dissemination. The post-campaign recruitment and data collection will follow the media campaign and partner outreach.

Information to be collected

The online surveys will consist of dichotomous (yes/no), multiple response, interval (rating scales), and open-ended questions. Efforts were made to limit the number of questions to only those questions that tie to the key components of the two logic models and corresponding outcome indicators. The survey questions vary to some extent depending on the campaign phase and intended audience. Tables 3 and 4 describe the various sections in the survey and the differences and similarities between the surveys during the pre- and post-campaign phases. A series of questions on knowledge and behavior in both the pre- and post-campaign surveys will collect data that may show an association between COVID-19 and the outcomes of the campaign. The findings will be useful in determining whether to incorporate messages about COVID-19 prevention practices, resources for educational purposes, and ways to reduce COVID-19 fatigue into future *BAA* materials. Copies of the formatted surveys can be found in Attachments C - F.

Table 3: Sections in the BAA Consumer Pre- and Post-Surveys

Survey Section	Pre-Campaign (Exposed to BAA messaging)	Pre-Campaign (Unexposed to BAA messaging)	Post-Campaign (Exposed to BAA messaging)	Post-Campaign (Unexposed to BAA messaging)
Screener	X	X	X	X
Exposure to Campaign	X	X	X	X
Frequency and Channel of Exposure	X		X	
Knowledge of Antibiotics	X	X	X	X
Attitudes and Beliefs about Antibiotics	X	X	X	X
Behavior (including COVID-19 behavior)	X	X	X	X
Sources of Information	X	X	X	X
Use of Campaign Materials			X	
Media Use and Habits				X
Demographic Characteristics	X	X	X	X

Table 4: Sections in the BAA HCP Pre- and Post-Campaign Surveys

Survey Section	Pre-Campaign (Exposed to	Pre-Campaign (Unexposed to	Post-Campaign (Exposed to	Post-Campaign (Unexposed to
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	<i>BAA messaging)</i>	<i>BAA messaging)</i>	<i>BAA messaging)</i>	<i>BAA messaging)</i>
Screener	X	X	X	X
Exposure to Campaign	X	X	X	X
Frequency and Channel of Exposure	X		X	
Risks and Benefits of Antibiotics: Attitudes and Beliefs	X	X	X	X
Discussing Antibiotics with Patients: Attitudes, Beliefs, and Behaviors	X	X	X	X
Covid-19 Behavior	X	X	X	X
Use of Campaign Materials			X	
Media Use and Habits				X
Demographic Characteristics	X	X	X	X

### 3. Use of Improved Information Technology and Burden Reduction

Data will be collected via a web-based survey. The vendor will use responsive design to facilitate completion of the survey on different types of devices (e.g., desktop/laptop computer, tablet, mobile phone). Use of web-based surveys reduces respondent burden by automating “skip” instructions rather than asking participants to interpret and implement the instructions themselves. This approach is less cognitively demanding and reduces the amount of time it will take participants to complete the survey. In addition, the survey will automatically place results in a format that can be read by statistical analysis software such as SPSS.

### 4. Efforts to Identify Duplication and Use of Similar Information

Since its inception in 2017, the *BAA* campaign has successfully built strong relationships with other federal agencies, academic institutions/non-government organizations to strategically identify messaging and materials for the *BAA* campaign, with one collective goal: to improve appropriate antibiotic use and combat AR. These groups include the Health Resources and Services Administration (HRSA), American Dental Association (ADA), Society of Infectious Diseases Pharmacists (SIDP), American Society of Health System Pharmacists (ASHP), The Pew Charitable Trusts, Tennessee Department of Health, Children’s Hospital of Philadelphia, and University of Michigan Healthcare System, among others. These groups have expressed a great deal of interest in *BAA*’s performance, including ensuring the campaign work is effective in reaching our intended consumer and HCP audiences, and making an impact in the community. Furthermore, these collaborations serve as information channels, help prevent redundancy, and promote the use of consistent messaging and measures of campaign effectiveness.

1. No other governmental or institutional agencies are attempting to collect this data as this work is specific to evaluating the *BAA* campaign.
2. Because this evaluation work is specific to assessing the reach and impact of CDC’s *BAA* campaign, there are no other data sources applicable as no other agency has conducted this work.

CDC DHQP will plan to regularly share findings from our work with those partners whom we work closely with.

## **5. Impact on Small Businesses or Other Small Entities**

This data collection will not involve small businesses.

## **6. Consequences of Collecting the Information Less Frequently**

This request is for a one-time information collection.

## **7. Special Circumstances Relating to the Guidelines of 5 CFR 1320.5**

There are no special circumstances with this data collection package. This request fully complies with the regulation 5 CFR 1320.5.

## **8. Comments in Response to the Federal Register Notice and Efforts to Consult Outside the Agency**

A. A 60-day Federal Register Notice was published in the *Federal Register* on January 31, 2022, Vol. 87, No. 20, pp. 4887 (**Attachment B**). CDC received one non-substantive public comment related to this notice and responded accordingly (**Attachment B1**).

B. The data collection instruments were designed by CDC DHQP and CATMEDIA. No consultations outside of CDC other than with the contractor occurred.

## **9. Explanation of Any Payment or Gift to Respondents**

Participants who complete either the pre-or post-campaign surveys will receive a token of appreciation for their participation within seven days of taking the survey. Based on OMB's guidance (OMB, 2016) on factors that may justify provision of a token of appreciation, we have determined that the following reasons apply.

*Past Experience.* Multiple studies using a variety of data collection methodologies have shown that offering incentives increases participation rates. When applied reasonably, incentives are not an unjust inducement, but rather an approach that acknowledges participants for their participation (Halpern et al., 2004; Vellinga et al., 2020). Respondents will receive \$25 (consumers) or \$75 (HCPs) in the form of Venmo or PayPal (electronic delivery) or a pre-paid gift card as a token of appreciation for their time and efforts, an amount commensurate with other market surveys (Kuhn, 2020; Pollfish, 2021; Surveytown, 2016). Furthermore, based on CATMEDIA's experience and expertise with recruiting participants for this type of assessment, they believe that the incentives noted above will be adequate to recruit the maximum response from each intended audience.

*Improved coverage of specialized respondents, rare groups, or minority populations:* Key audiences in this data collection include HCPs who prescribe antibiotics. HCPs have been challenging to recruit for studies as they are a specialized, unique group of people whose time is limited and, thus, quite valuable

(Pit et al., 2014). A token of appreciation will ensure participation from HCPs, which will improve data quality by improving validity and reliability.

*Data quality:* If we are unable to recruit sufficient numbers of respondents to participate in the data collection, we will be unable to collect information to inform the development of new or revisions to existing BAA messages, concepts, and materials which will limit our ability to determine if they are acceptable, understandable, motivating, etc. to the priority audiences, and avoid unintended negative consequences of messages/materials.

*Reduced data collection costs:* We anticipate that without the token of appreciation, recruitment and data collection costs will be much higher because we will need to screen more people to achieve the desired cooperation rate and recruit additional participants to make up for a higher rate of nonresponses.

## **10. Protection of the Privacy and Confidentiality of Information Provided by Respondents**

This information collection request has been reviewed by NCEZID's Information Systems Security Officer who has determined that the Privacy Act does not apply. No personal identifying information (PII), such as names, addresses, or phone numbers, will be collected during the data collection or maintained in any data files held by CDC or CATMEDIA. The online survey panel vendor maintains PII, such as name, address, phone, and email addresses in their database of registered panelist to contact individuals for participation and for following up with incentive payments. The vendor's database is maintained according to privacy regulations. The PII is stored with the vendor and will never be shared with CDC or CATMEDIA.

Demographic information (e.g., age, gender, race/ethnicity, etc.) will be collected as part of the screening to determine participant eligibility, however no direct personal identifiers (e.g., date of birth, full name, phone number, social security number, etc.) will be collected or maintained. All PII will be kept separate from participants responses to the surveys. The BAA surveys do not collect additional PII.

## **11. Institutional Review Board (IRB) and Justification for Sensitive Questions**

### Institutional Review Board (IRB)

NCEZID's Human Subjects Advisor has determined that this information collection is not research involving human subjects. IRB approval is not required. The IRB exemption determination for this study is included in Attachment G1 and G2.

Data to be collected is not sensitive in nature

## **12. Estimates of Annualized Burden Hours and Costs**

### **A. Estimated Annualized Burden (Hours)**

The annual burden hours requested (842) are based on the number of completed responses we expect to collect over the requested period for this information collection. The survey is estimated at no longer

than 20 minutes per respondent. Respondents can complete the survey only once. While participants will be screened, there will be a minimal time burden due to prior consent to participate in this study. The screener questions are included in the survey instruments (Attachments C-F).

Type of Respondents	Form Name	No. of Respondents	No. of Responses per Respondent	Average Burden per Response (in hours)	Total Burden Hours
Consumer Audiences	BAA Consumer Pre-Campaign web survey	473	1	20/60	158
Consumer Audiences	BAA Consumer Post-Campaign web survey	473	1	20/60	158
HCP Audiences	BAA HCP Pre-Campaign web survey	788	1	20/60	263
HCP Audiences	BAA HCP Post-Campaign web survey	788	1	20/60	263
<b>Total</b>					<b>842 hours</b>

## B. Estimated Annualized Burden Costs

The annualized costs for respondents are based on data from the U.S. Department of Labor (DOL), Bureau of Labor Statistics (2022). To calculate annualized costs to consumers, we used the mean hourly wage rate of \$28.01 which represents the DOL estimated mean for state, local, and private industry earnings and assumes an average hourly wage rate for respondents who work an estimated 40-hour work week. In calculating annualized costs to healthcare professionals, we used \$43.80 per hour which represents DOL's estimated mean hourly wage for healthcare practitioners and technical occupations (e.g., physicians, registered and licensed nurses, advanced practice professionals, EMS, medical technicians, etc.). The estimated annual cost to all participants will be \$31,889.

Type of Respondent	Form Name	Total Burden Hours	Hourly Wage Rate	Total Respondent Costs
Consumers	BAA Consumer Pre-Campaign web survey	158	\$28.01	\$4,425
Consumers	BAA Consumer Post-Campaign web survey	158	\$28.01	\$4,425
HCPs	BAA HCP Pre-Campaign web survey	263	\$43.80	\$11,519
HCPs	BAA HCP Post-Campaign web	263	\$43.80	\$11,519

	survey		
<b>Total</b>			<b>\$31,889</b>

**13. Estimates of Other Total Annual Cost Burden to Respondents or Record Keepers**

There are no costs to respondents other than their time to participate.

**14. Annualized Cost to the Government**

Total estimated annualized cost to the government is \$885,765.65, based on expenses incurred in the following categories: salary of CDC staff who are responsible for the overall project design and project oversight, and contractor costs associated with data collection and analysis activities.

**15. Explanation for Program Changes or Adjustments**

This is a new information collection.

**16. Plans for Tabulation and Publication and Project Time Schedule**

The following is the estimated project schedule anticipated for this study.

<b>Estimated Project Schedule</b>	
<b>Activity</b>	<b>Estimated Time Schedule</b>
Formal pilot test with intended audiences	2—3 months after OMB approval
Pre-campaign survey recruitment	3—4 months after OMB approval
Pre-campaign information/data collection	3—4 months after OMB approval
Media campaign and partner outreach	4—7 months after OMB approval
Post-campaign survey recruitment	7—8 months after OMB approval
Post-campaign information/data collection	7—8 months after OMB approval
Data cleaning and analyses	8—9 months after OMB approval
Final report	9—11 months after OMB approval
Dissemination of findings	12 months onward after OMB approval

**17. Reason(s) Display of OMB Expiration Date is Inappropriate**

The display of the OMB Expiration date is not inappropriate.

**18. Exceptions to Certification for Paperwork Reduction Act Submissions**

There are no exceptions to the certification.

**List of Attachments**

A. Authorizing Legislation

B. BAA 60-Day FRN Published

B1. Comments Received to 60-Day FRN

- C. BAA Consumer Pre-Campaign Screener and Survey
- D. BAA Consumer Post-Campaign Screener and Survey
- E. BAA HCP Pre-Campaign Screener and Survey
- F. BAA HCP Post-Campaign Screener and Survey
- G1, G2. NRD
- H. Recruitment Invitation
- I. Informed Consent Form
- J. Reminder email

## References

- Centers for Disease Control and Prevention. (2016, May 3). *1 in 3 antibiotic prescriptions unnecessary*. CDC Newsroom. <https://www.cdc.gov/media/releases/2016/p0503-unnecessary-prescriptions.html>
- Centers for Disease Control and Prevention. (2018, June 21). *Be antibiotics aware: Smart use, best care*. CDC Public Health Grand Rounds. Retrieved August 24, 2022, from <https://www.cdc.gov/grand-rounds/pp/2018/20180515-antibiotics-aware.html>
- Centers for Disease Control and Prevention. (2019). *Antibiotic resistance threats in the United States, 2019*. Atlanta, GA: US Department of Health and Human Services, CDC. <https://www.cdc.gov/drugresistance/pdf/threats-report/2019-ar-threats-report-508.pdfpdficon>
- Centers for Disease Control and Prevention. (2021a, April 7). *Core elements of antibiotic stewardship*. Retrieved August 24, 2022, from <https://www.cdc.gov/antibiotic-use/core-elements/index.html>
- Centers for Disease Control and Prevention. (2021b, October 7). *Improving antibiotic use*. Retrieved August 24, 2022, from <https://www.cdc.gov/antibiotic-use/stewardship-report/index.html>
- Centers for Disease Control and Prevention. (2021c, October 12). *Measuring outpatient antibiotic prescribing*. Retrieved August 24, 2022, from <https://www.cdc.gov/antibiotic-use/data/outpatient-prescribing/index.html>
- Centers for Disease Control and Prevention. (2021d, November 12). *Be antibiotics aware: Smart use, best care*. Retrieved August 24, 2022, from <https://www.cdc.gov/patientsafety/features/be-antibiotics-aware.html>
- Centers for Disease Control and Prevention. (2021e, November 23). *U.S. National Action Plan*. Retrieved August 25, 2022, from <https://www.cdc.gov/drugresistance/us-activities/national-action-plan.html>
- Centers for Disease Control and Prevention. (2022a, February 25). *COVID-19 & Antibiotic Resistance*. Retrieved August 22, 2022 from . <https://www.cdc.gov/drugresistance/covid19.html>
- Centers for Disease Control and Prevention. (2022b, July 12). *COVID-19 reverses progress in fight against antimicrobial resistance in U.S*. CDC Newsroom. <https://www.cdc.gov/media/releases/2022/s0712-Antimicrobial-Resistance.html>
- Center for Disease Dynamics, Economics & Policy. (2016). *Antibiotic use and resistance in food animals: Current policy and recommendations*. [https://cddep.org/wp-content/uploads/2017/06/india\\_abx\\_report-2.pdf](https://cddep.org/wp-content/uploads/2017/06/india_abx_report-2.pdf)

- Halpern, S.D., Karlawish, J.H.T., Casarett, D., Berlin, J.A., & Asch, D.A. (2004). Empirical assessment of whether payments are undue or unjust inducements for participation in clinical trials. *Archives of Internal Medicine*, 164(7), 801-803. <https://doi.org/10.1001/archinte.164.7.801>
- Kuhn, G. (2020, March 9). *How much should you pay participants in market research?* Market Research, N.Y. <https://www.driverresearch.com/market-research-company-blog/how-much-should-you-pay-participants-in-market-research/>
- Langdon, A., Crook, N., & Dantas, G. (2016). The effects of antibiotics on the microbiome throughout development and alternative approaches for therapeutic modulation. *Genome Medicine*, 8, 39. <https://doi.org/10.1186/s13073-016-0294-z>
- Office of the Assistant Secretary for Planning and Evaluation. (2020). *National Action Plan for Combatting Antibiotic-Resistant Bacteria (CARB), 2020-2025*. US Department of Health and Human Services, ASPE. <https://aspe.hhs.gov/pdf-report/carb-plan-2020-2025>
- Office of Management and Budget. (2016). *Question and answers when designing surveys for information collections*. [https://obamawhitehouse.archives.gov/sites/default/files/omb/inforeg/pmc\\_survey\\_guidance\\_2006.pdf](https://obamawhitehouse.archives.gov/sites/default/files/omb/inforeg/pmc_survey_guidance_2006.pdf)
- Pitt, S.W., Vo, T., Pyakurel, S. (2014). The effectiveness of recruitment strategies on general practitioner's survey response rates -- a systematic review. *BMC Med Res Methodol*, 14, 76. <https://doi.org/10.1186/1471-2288-14-76>
- Pollfish. (2021, February 11). *The best survey incentives to increase survey participation*. Pollfish Market Research, N.Y. <https://resources.pollfish.com/market-research/the-best-survey-incentives-to-increase-survey-participation/>
- Regea, G. (2018). Review on antibiotics resistance and its economic impacts. *Clinical Research*, 5(5), 555675. DOI: 10.19080/JPCR.2018.05.555675
- Surveytown. (2016, August 23). *7 Survey Incentives That Get Respondents Every Time*. SurveyTown. <https://surveytown.com/7-survey-incentives-that-get-respondents-every-time/>
- Teixeira Rodrigues, A., Roque, F., Falcão, A., Figueiras, A., & Herdeiro, M. T. (2013). Understanding physician antibiotic prescribing behaviour: A systematic review of qualitative studies. *International Journal of Antimicrobial Agents*, 41(3), 203–212. <https://doi.org/10.1016/j.ijantimicag.2012.09.003>
- U.S. Department of Labor, Bureau of Labor Statistics. (2022, March 31). May 2021 national occupational employment and wage estimates: United States. Retrieved August 22, 2022, from [https://www.bls.gov/oes/current/oes\\_nat.htm#00-0000](https://www.bls.gov/oes/current/oes_nat.htm#00-0000)
- Vellinga, A., Devine, C., Ho, M. Y., Clarke, C., Leahy, P., Bourke, J., Devane, D., Duane, S., & Kearney, P. (2020). What do patients value as incentives for participation in clinical trials? A pilot discrete choice experiment. *Research Ethics*, 16(1–2), 1–12. <https://doi.org/10.1177/1747016119898669>



