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AVIAN INFLUENZA IN POULTRY:

AMERICAN KNOWLEDGE, PERCEPTIONS, AND RESPONSES

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AVIAN INFLUENZA IN POULTRY: AMERICAN KNOWLEDGE, PERCEPTIONS, AND RESPONSES

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EXECUTIVE SUMMARY

- **Avian influenza is on the national agenda**
 - Most Americans (93%) indicate they have heard of avian influenza.
 - Nearly three-quarters of Americans say they have discussed avian influenza with someone else.
- **Still, most Americans don't know much about avian influenza**
 - More than half of Americans say they know 'little' or 'nothing' about avian influenza.
 - On average, Americans correctly answer fewer than 60% of a series of 22 objective knowledge questions.
- **Uncertainty regarding food-related transmission**
 - The majority of Americans are aware that animal to human transmission of the avian influenza virus can occur from contact with live infected birds or feces from infected birds.
 - About one-third are unsure if transmission is possible from eating infected meat or eggs.
- **Conflicting beliefs about preventing infection**
 - More than two-thirds of Americans believe the virus is present in uncooked meat of infected chickens.
 - Yet, less than half believe that proper cooking chicken kills the avian influenza virus.
 - Few Americans believe infected live birds are easily recognizable; yet, many believe infected raw meat is readily identifiable.
- **Americans perceive the general risks posed by avian influenza to be low**
 - Americans aren't very worried about illness with avian influenza.
 - Americans report their risk of infection with avian influenza in the next year to be relatively low and other Americans' risk of infection to be higher, but still moderate.
- **Yet, Americans see avian influenza in chicken as more risky**
 - The majority of Americans report greater perceived risk specifically associated with the consequences of eating chicken infected with avian influenza.
- **Most Americans currently view chicken as safe and continue to eat it**
 - More than nine-in-ten Americans say they currently eat chicken.
 - Americans report that chicken products in the U.S. are currently safe to eat.
- **The proximity of avian influenza cases affects Americans likelihood of eating chicken**
 - The nearer avian influenza comes to the U.S., the less likely Americans are to eat chicken.
 - Avian influenza does not necessarily have to emerge in the U.S. to affect poultry consumption.
- **Many Americans are unlikely to eat chicken if the avian influenza virus is found inside the U.S.**
 - Americans say they are relatively unlikely to eat chicken in the U.S. if avian influenza is found in wild birds in the U.S. or if someone became sick with avian influenza from eating chicken in the U.S.
 - Americans report being least likely to eat chicken in the U.S. if avian influenza was found in chickens on farms in the U.S. and 39% report that they would definitely not eat chicken.
 - Americans report reluctance to eat *any* chicken products if U.S. chickens are infected.
- **Even with a strong, specific assurance of safety, many Americans report that they would be unlikely to eat chicken again if the avian influenza virus is found inside the U.S.**
 - One-fifth (20%) say they would never eat chicken again.
 - Those participants who said they would eat chicken again, report that it would take an average of 144 days for them to start eating it again ($SD=337.67$; $Mdn=42$).

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INTRODUCTION

The threat of avian influenza has received a great deal of attention in recent years; and rightly so. Since the 1996 discovery of the highly pathogenic H5N1 strain of avian influenza in China, the virus has spread rapidly within Asia, Europe, and Africa. Indeed, the presence of the virus has now been confirmed in birds or humans in more than 55 countries (World Organisation for Animal Health, 2007). Moreover, as of May 30, 2007 there were 308 human cases of avian influenza reported in 12 countries, resulting in 186 deaths (World Health Organization [WHO], 2007).

The principal means of transmission to humans has been through direct and close contact with infected live poultry (United States Department of Agriculture [USDA] 2006; WHO, 2006). However, concerns about the seriousness of the disease and the possibility that genetic mutations in the virus could make it more easily transmissible among humans (Claas, et al., 1998) have led national and international health agencies to take actions to both prevent and prepare for the possibility of a pandemic.

Given these predictions, it is not surprising that the threat of avian influenza has also been the subject of countless news stories, talk shows, more than a dozen books, and even fictional television dramas. Some have predicted that the consequences of such a pandemic could be comparable to those of the 1918 “Spanish Flu” epidemic, which resulted in tens of millions of deaths and severe social and economic disruptions (Trampuz, A., Prabhu, M.R., Smith, F.T., and Baddour, M.L., 2004; Hien, T.T., de Jong, M., and Farrar, J., 2004). Some experts have also suggested that another influenza pandemic is inevitable, providing a sense of urgency to these efforts (WHO, 2005).

Yet, while most of the focus has been on the potential impacts of pandemic influenza in humans, little attention has been paid to the economic losses that have already resulted from the appearance of the highly pathogenic H5N1 avian influenza in wild and domestic birds. These include direct financial losses resulting from the deaths of infected birds and from

measures designed to control the spread of the virus, especially the destruction and disposal of bird flocks.

For example, according to the Food and Agriculture Organization (FAO), between 2003 and 2004 the avian influenza outbreak in Vietnam resulted in the death or destruction of 44 million birds, amounting to nearly 17.5% of the poultry population in that country (McLeod, Morgan, Prakash, and Hinrichs, n.d.). During the same period, an outbreak of avian influenza in Thailand resulted in the death or destruction of 29 million birds, amounting to approximately 14.5% of the poultry population (McLeod, et al., n.d.). Overall, the FAO estimates that H5N1 avian influenza has led to the death or destruction of more than 200 million birds worldwide, resulting in over \$20 billion in economic losses (Harris, 2006; McLeod, et al., n.d.).

Consumer responses to the discovery of the H5N1 virus in birds have also been immediate and dramatic, resulting in additional economic losses. In most countries in Asia, Europe, and Africa, the detection of H5N1 avian influenza in either wild or domestic birds has resulted in sharp declines in sales, prices, and consumption of poultry. In Europe, the resulting declines in consumption ranged from 20% in Germany, Ireland, and Slovenia, to 30% in France, Cyprus and Austria, to dramatic 50% decreases in poultry consumption in Greece and Italy (European Commission, 2006).

The economic impacts of avian influenza in birds have extended beyond the shores of the countries where infected birds have been discovered. For example, in the United States, export prices dropped 13% as the result of declining shipments to Eastern Europe and Central Asia in November and December of 2005 (USDA, 2006).

As of May 30, 2007, there were no reported cases of the highly pathogenic strain of avian influenza (H5N1) in either birds or humans in the United States. Government regulators and the poultry industry have established a set of “best practices” and biosecurity protocols designed to prevent and contain outbreaks of avian influenza.

Low pathogenicity strains of avian influenza however, are not uncommon and historically, sporadic cases have been detected in wild birds

and domestic poultry in North America. This includes a few reported cases of the low pathogenicity H5N1 strain in wild birds in the United States (USDA, 2006, 2007).

The disease caused by a low pathogenicity avian influenza virus typically produces symptoms that are relatively mild. Nonetheless, outbreaks of even low pathogenicity avian influenza can be very costly due to losses in egg and poultry production, the expense of control measures, including the culling of infected birds, and the loss of export markets (USDA, 2007).

To understand how the American public might respond to an outbreak of highly pathogenic H5N1 avian influenza in either poultry or wild birds in the United States, researchers at the Food Policy Institute at Rutgers, the State University of New Jersey conducted a national survey of public knowledge, attitudes, intentions, and behaviors related to the threat of avian influenza in the food supply.

METHODS

Computer assisted telephone interviews (CATI) were conducted with a nationally representative sample of 1,200 non-institutionalized American adults (aged 18 and over) between May 3, 2006 and June 5, 2006. Proportional random digit dialing was used to select survey participants from the fifty United States. Working non-business numbers were called a minimum of 15 times to try to reach potential respondents. The cooperation rate was 60%¹ and the sampling error was $\pm 2.8\%$. The survey took an average of 21 minutes to complete. The resulting data were weighted by gender, age, race, ethnicity, and education to approximate United States Census figures.

Prior to commencing the interview, all participants were informed that the survey questions focused on highly pathogenic avian influenza. As the term “bird flu” is most commonly used in the media when referring to the avian influenza virus, this term was used throughout the majority of the interview. Specifically, respondents were told that the

1 Cooperation rate for working, non-business numbers, using a 15 call-back design

interviewer would “like to ask [them] some questions about avian influenza or bird flu” and “though there are different types of influenza or flu viruses, for these questions we’re specifically talking about bird flu. We’re only talking about the type of bird flu caused by H5N1, also known as highly pathogenic bird flu.” A copy of the full questionnaire can be found at the end of this report.

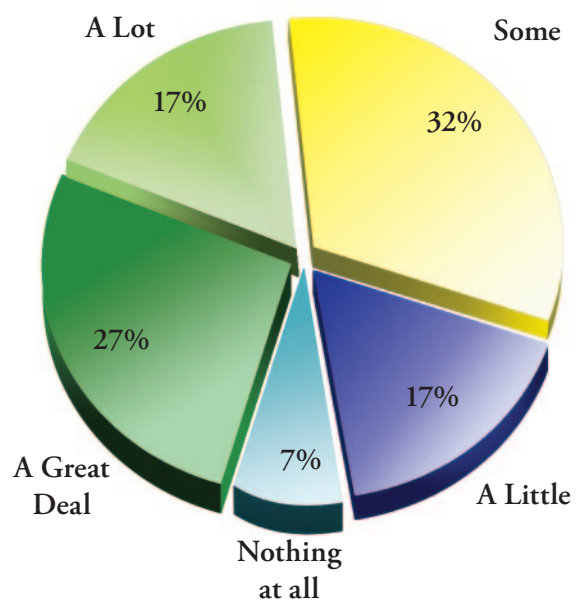
RESULTS

AWARENESS

Avian influenza is on the national agenda

Most Americans (93%) indicated they have heard of avian influenza². Moreover, nearly half (44%) said they have heard at least ‘a lot’ about it (27% ‘a great deal’ and 17% ‘a lot’) (see Figure 1). About one-third (32%) reported they’ve heard ‘some’ and 17% reported they have heard ‘a little’ about avian influenza. Less than one-tenth (7%) said they have heard ‘nothing at all’ about avian influenza.

FIGURE 1. AWARENESS OF AVIAN INFLUENZA



2 n=1,200

Avian influenza is a topic of conversation

Nearly three-quarters of Americans (71%) said they have discussed avian influenza with someone else³. Nearly one-quarter (24%) of participants said they have talked about avian influenza ‘frequently’ or ‘occasionally’ (5% and 19% respectively). More than one-fifth (21%) said they have talked about avian influenza ‘a few times’ and 26% report they have done so ‘once or twice’. Only about a quarter (29%) indicated they have ‘never’ had a conversation about avian influenza with someone else.

KNOWLEDGE

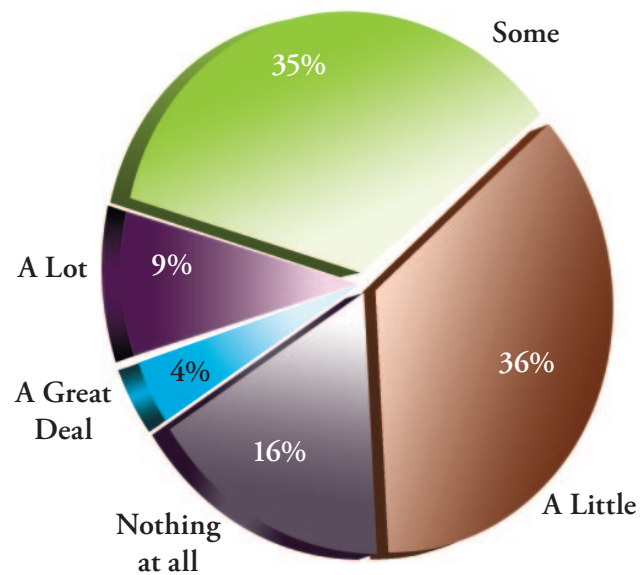
Still, most Americans say they don’t know much about avian influenza

While the majority of Americans said they have heard about avian influenza and discussed the issue with others, more than half (52%) said that they know ‘little’ or ‘nothing’ about it (36% and 16% respectively) (Figure 2). Only about one-in-eight (13%) reported they knew ‘a great deal’ or ‘a lot’ about avian influenza (4% and 9% respectively). About one-third (35%) indicated they knew ‘some’ about avian influenza.

Approximately 6% of those interviewed (69 respondents) said that they both had heard ‘nothing at all’ and knew ‘nothing at all’ about avian influenza and were therefore excluded from completing the rest of the survey. Logistic regression analyses suggest that there were no differences in age, gender, ethnicity, marital status, or region of the country between those who were excluded and those who completed the entire survey. However, those who were excluded were more likely to be African-American than

³ n=1200, Includes the 5.8% of the respondents who report they have heard nothing and know nothing about avian influenza.

FIGURE 2. KNOWLEDGE ABOUT AVIAN INFLUENZA



White⁴ and to have less education⁵ than those who completed the remainder of the survey⁶.

Americans report they don’t know much, and overall, they’re right

To explore what Americans know about avian influenza (and its relationship to food), they were asked twenty-two objective questions related to current cases of avian influenza in wild birds, poultry, and humans; transmission of the avian influenza virus from human and non-human sources; and methods of preventing exposure and infection with avian influenza. On average, Americans were only able to answer 59% of the twenty-two questions correctly ($M=13.03$, $SD=3.82$; $Mdn=13.00$). Details of the results of participants’ responses to these questions are presented below.

⁴ (OR=2.68 [95% CI=1.22, 5.90])

⁵ (OR=0.42 [95% CI=0.31, 0.06])

⁶ As the remainder of the results apply only to Americans who said that they had heard or knew something about avian influenza, it is important to note that an additional 5.8% of the population would likely have said that they were unsure about the answers to the questions discussed below.

Who knows the most about avian influenza and food?

Men, Whites, those with more education, and higher incomes⁷ correctly answered significantly more questions about avian influenza and food (see Table 1). There were no differences in the number of correctly answered questions based on geographic region and age.

TABLE 1. SOCIOECONOMIC PREDICTORS OF DIFFERENCES IN OBJECTIVE KNOWLEDGE ABOUT AVIAN INFLUENZA

	n	M	SD	F	p
All	1,131	13.03	3.82		
Men	541	13.38	3.79		
Women	590	12.71	3.82		
Gender				8.79	0.003
Less than H.S.	146	11.58	3.56		
H.S./ GED	344	12.50	3.92		
Some College/ A.A	338	13.28	3.73		
4 year degree	196	13.87	3.75		
Grad./ Prof. degree	107	14.40	3.35		
Education				13.65	0.0001
White	879	13.31	3.75		
African-American	127	12.32	3.89		
Other	80	11.91	3.93		
Race				8.90	0.001

⁷ $r(979) = 0.22, p = 0.001$

What do Americans know about the spread of avian influenza?

Most are aware of human avian influenza cases outside the United States

Nearly nine-in-ten Americans (87%) correctly indicated that humans have been infected with highly pathogenic avian influenza in some places around the world. Only 5% said that there have been no human cases of avian influenza and 8% indicated that they did not know. In comparison, nearly one-fifth (19%) of the participants incorrectly indicated that human cases of highly pathogenic avian influenza have already been reported in the United States. Less than two-thirds (62%) correctly reported that there have been no human cases of avian influenza in the United States and 19% said they weren't sure.

Few believe avian influenza has spread to birds in the United States, but many are unsure

Nearly three-quarters of the respondents (73%) correctly indicated that chickens have been infected with highly pathogenic avian influenza in some places around the world. However, one-fifth (20%) said they weren't sure, and 7% reported that no chickens have been infected with avian influenza anywhere in the world.

Moreover, when asked about highly pathogenic avian influenza infections in the United States, nearly one-third (31%) indicated they did not know if there have been cases in chickens and 10% incorrectly reported that chickens in the United States had been infected. Only 59% of the participants correctly indicated that there have been no cases of highly pathogenic avian influenza in chickens in the United States

Similarly, two-thirds of the respondents (66%) correctly reported that wild birds have been infected with highly pathogenic avian influenza in some places around the globe. About one-quarter (23%) said they weren't sure and 11% incorrectly indicated that there have been no cases of avian influenza in wild birds. Yet, only about half (48%) of the respondents correctly reported that there have been no cases

of highly pathogenic avian influenza in wild birds in the United States. One-in-six (17%) incorrectly indicated that there have been cases and more than one-third (35%) said they did not know if there have been cases of avian influenza in wild birds in the United States.

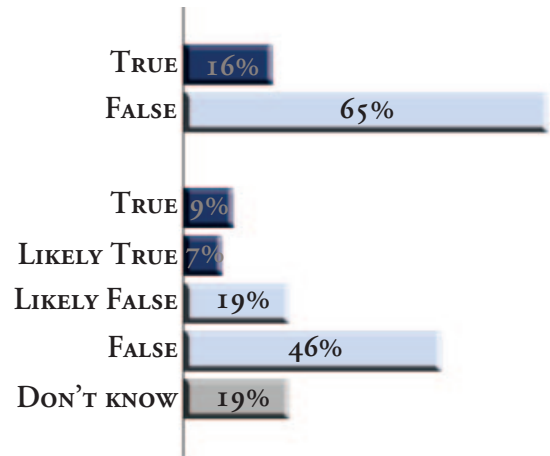
Many are unclear about the country of origin of chickens sold in the United States

Only about two-thirds of Americans (65%) are aware that most of the chicken sold in grocery stores in the United States is produced on farms within the country (see Figure 3). Moreover, less than half the respondents (46%) reported that it was ‘false’ that “much of the chicken in U.S. grocery stores is imported from other countries” and nearly one-fifth (19%) said they weren’t sure.

What do Americans know about transmission of the avian influenza virus?

While the majority of Americans are correct that transmission of the avian influenza virus can occur as a result of touching live infected birds or through contact with the feces

FIGURE 3. DISTRIBUTION OF RESPONSES TO: “MUCH OF THE CHICKEN IN U.S. GROCERY STORES IS IMPORTED FROM OTHER COUNTRIES.”



of infected birds, many are unsure if transmission is possible through the ingestion of fully cooked, infected poultry products (see Table 2).

More than three-quarters of Americans (77%) said that it is true that people can get sick with avian influenza from contact with feces from an infected bird (45% ‘true’ and 32% ‘likely true’) and more than two-thirds (70%) said it is true that people can become

TABLE 2. KNOWLEDGE OF POSSIBLE ROUTES OF TRANSMISSION OF AVIAN INFLUENZA VIRUS

People can get sick with the bird flu from . . .	False	Likely False	Likely True	True	Don't know
Contact with feces from an infected bird (T)	3%	3%	32%	45%	17%
Touching live birds infected with bird flu (T)	10%	7%	29%	41%	13%
Contact with other people infected with bird flu (T)	18%	9%	21%	32%	20%
Touching raw meat from an infected chicken (T)	13%	11%	29%	30%	17%
Eating <i>undercooked</i> meat from an infected chicken (T)	4%	5%	31%	47%	13%
Eating <i>fully</i> cooked meat from an infected chicken (F)	24%	16%	15%	18%	27%
Eating fully cooked eating eggs from an infected chicken (F)	23%	17%	15%	11%	34%
Mosquito bites (F)	32%	16%	15%	14%	23%

sick with avian influenza as a result of touching live infected birds (41% ‘true’ and 29% ‘likely true’). Moreover, more than half (59%) indicated that people could become sick as a result of touching raw infected chicken (30% ‘true’ and 29% ‘likely true’) or through contact with other infected people (32% ‘true’ and 21% ‘likely true’).

Yet, when asked specifically about food-related transmission of the avian influenza virus, Americans were less certain. More than three-quarters (78%) correctly indicated that it is true that people can get sick with avian influenza as a result of eating undercooked meat from an infected chicken (47% ‘true’ and 31% ‘likely true’). While only four-in-ten correctly indicated that it is false that people could become ill as the result of eating cooked meat from an infected chicken (24% ‘false’ and 16% ‘likely false’) and more than one-quarter (27%) reported that they weren’t sure. Further, one-quarter incorrectly reported that it is true that people could get sick from eating fully cooked eggs from a chicken infected with avian influenza (11% said ‘true’ and 15% said ‘likely true’); yet, more than one-third (34%) indicated that they did not know.

What do Americans know about prevention of the avian influenza virus?

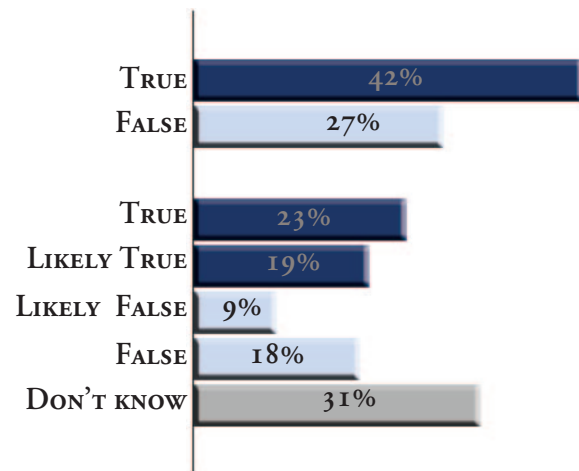
The majority of Americans believe the avian influenza virus is present in uncooked meat of infected birds

More than two-thirds of Americans (64%) correctly indicated that it is true that the avian influenza virus is present in the uncooked meat of an infected chicken (43% ‘true’ and 21% ‘likely true’). However, nearly one-quarter (23%) said they weren’t sure if the virus was present and one-in-eight (13%) reported that it is false that the virus is present in uncooked chicken meat (9% ‘false’ and 4% ‘likely false’).

Many Americans do not know that properly cooking chicken kills the avian influenza virus

Yet, while the more than two-thirds of Americans are aware that the avian influenza virus is present in the uncooked meat of infected chickens, less than half (42%) believe that properly cooking chicken kills the avian influenza virus (Figure 4). Specifically, less than one-quarter (23%) of participants said it is ‘true’ that “cooking chicken to recommended temperatures kills the bird flu virus” (19% said it is ‘likely true’). Comparatively, more than one-quarter (27%) of the respondents indicated that it cooking does not kill the virus and nearly one-third (31%) of participants said that they were not sure.

FIGURE 4. DISTRIBUTION OF RESPONSES TO: “COOKING CHICKEN TO THE RECOMMENDED TEMPERATURES KILLS THE BIRD FLU VIRUS.”



Who doesn't know cooking kills the virus?

The results suggest that women are significantly less likely than men to be aware that proper cooking kills the avian influenza virus⁸ (see Table 3). Moreover, Americans with less education⁹ and less objective knowledge¹⁰ about avian influenza overall are less likely to know that the virus is killed in the cooking process. There were no differences in geographic

8 $F(1, 1145)=19.12, p=0.001$

9 $F(2, 1142)=3.22, p=0.001$

10 $B = 0.83, [95\% CI=0.80, 0.87], p=0.001$

region, age, income, or race in predicting which respondents knew that proper cooking kills the avian influenza virus.

TABLE 3. DEMOGRAPHIC DIFFERENCES IN KNOWLEDGE THAT PROPER COOKING KILLS THE AVIAN INFLUENZA VIRUS

	n	M	SD
Men	507	0.51 ^{1,2}	0.50
Women	590	0.38	0.49
Less than High School	89	0.30	0.46
High School/ GED	320	0.42	0.50
Some College/ Two-year degree	277	0.42	0.49
Four-year College degree	272	0.48	0.50
Graduate/ Professional degree	189	0.51	0.50

¹ 1=Correct

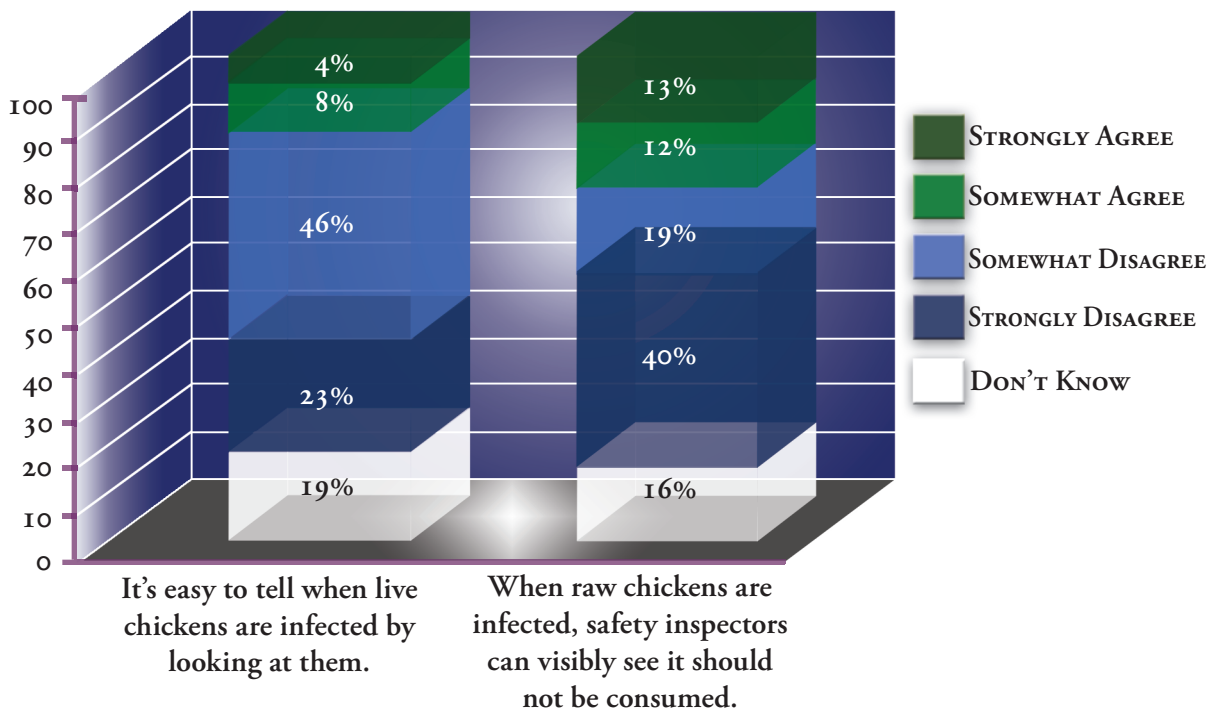
² Means equivalent to percentage correct

Many believe that the virus is visible, but the illness may not be

Since the majority of Americans believe that the avian influenza virus is present in uncooked infected chicken meat, it should be noted that there is considerable confusion about the ability to visibly detect birds or meat that should not be consumed. Although birds made ill by highly pathogenic avian influenza generally exhibit visible symptoms (USDA, 2006, 2007), only one-in-twenty-five participants (4%) said they ‘strongly agreed’ that “it is easy to tell when live chickens are infected with bird flu by looking at them” (see Figure 5). Nearly half (46%) reported they ‘strongly disagreed’ that infected birds could be easily identified, and nearly one-fifth (19%) said they did not know.

However, while few Americans believe that birds that are sick with avian influenza are easily distinguishable from healthy birds, many believe that raw meat infected with the virus is readily identifiable. One-quarter (25%) of the respondents agreed that “when raw chicken is infected with bird flu, safety inspectors can visibly see that it should not be

FIGURE 5. PERCEIVED VISIBILITY OF AVIAN INFLUENZA



consumed” (13% ‘strongly agreed’ and 12% ‘somewhat agreed’). Only four-in-ten (40%) said they ‘strongly disagreed’ that inspectors could visibly identify infected meat and 16% reported that they weren’t sure.

LIKELIHOOD OF INFECTION AND WORRY

What do Americans believe about the risks posed by avian influenza?

Americans are not very worried about illness with avian influenza

To measure how much Americans worry about becoming ill with avian influenza, participants were asked to rate “how worried [they were] about becoming sick with bird flu” using a semantic differential scale where zero represented “not at all worried” and ten represented “extremely worried”. Americans reported their worry about becoming sick with avian influenza to be low ($M= 2.84, SD= 2.90; Mdn=2.00$). More than one-quarter (29%) reported being ‘not at all worried’ of becoming sick with avian influenza, and only 5% said they were ‘extremely worried’ about becoming sick.

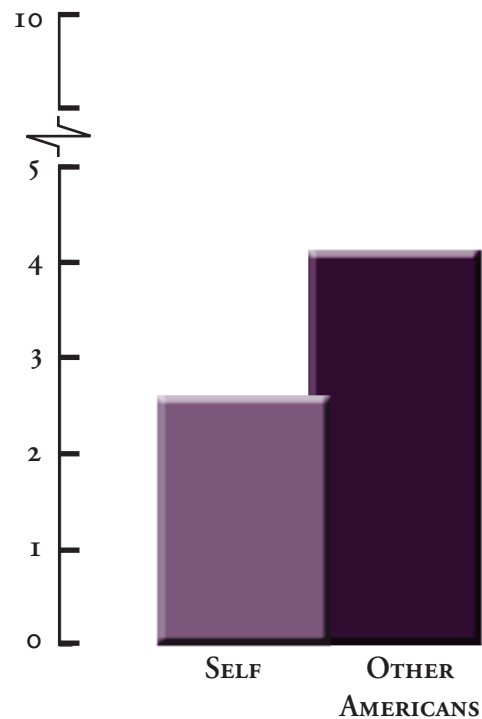
Americans see little general risk of infection with avian influenza

To examine perceptions of contracting avian influenza, respondents were asked to rate their risk and the risk of other Americans of “becoming infected with bird flu within the next year” (Figure 6). Using a semantic differential scale where zero represented “no risk at all” and ten represented “an absolute risk”, Americans reported their risk of infection with avian influenza in the next year to be relatively low ($M= 2.60, SD= 2.51; Mdn= 2.00$). Moreover, more than one-quarter (26%) reported having ‘no risk at all’ of becoming infected with avian influenza in the next year.

In contrast, while still seen as moderate, ($M= 4.11, SD= 2.51; Mdn= 4.00$) the participants

reported other Americans’ risk of infection as significantly greater than their own¹¹. Only 7% reported that other Americans have ‘no risk at all’ of infection with avian influenza in the next year.

FIGURE 6. AVERAGE PERCEIVED LIKELIHOOD OF INFECTION WITH AVIAN INFLUENZA IN THE NEXT YEAR FOR SELF AND OTHERS



However, Americans see greater risks associated with avian influenza specific to the food supply

Although most Americans reported little worry about with becoming infected or ill with avian influenza in general, the majority reported greater perceived risk specifically associated with eating chicken infected with avian influenza. Nearly two-thirds (63%) agreed that “if [they ate] chicken infected with the bird flu it is certain that they would get sick” and one-quarter (25%) agreed that “if they got sick with the bird flu from eating chicken, it is certain that they would die” (see Table 4).

Nearly three-quarters of the participants agreed that “chickens infected with bird flu in the U.S. food supply could kill many in a

¹¹ $t(1061) = -20.67, p < 0.0001$

short period of time” (73% agreed) and that “getting sick with bird flu from eating chicken is a risk that could threaten future generations of people” (71% agreed).

Moreover, nearly two-thirds (63%) agreed that “chickens infected with bird flu in the U.S. food supply would cause a global catastrophe”; and majorities reported that the risk of getting sick with avian influenza is new (74% agreed) and increasing (63% agreed).

TABLE 4. PERCEIVED RISK OF AVIAN INFLUENZA IN THE U.S. FOOD SUPPLY

Question	Strongly Agree	Some-what Agree	Some-what Dis-agree	Strongly Disagree
If I eat chicken infected with bird flu, it is certain I will get sick.	24%	39%	24%	13%
If I get sick with the bird flu from eating chicken, it is certain I will die.	9%	16%	37%	38%
Chickens infected with bird flu in the U.S. food supply could kill many in a short period of time.	38%	35%	16%	11%
Getting sick with bird flu from eating chicken is a risk that could threaten future generations of people.	37%	34%	16%	13%
Chickens infected with bird flu in the U.S. food supply would cause a global catastrophe.	32%	31%	21%	16%
Getting sick with bird flu from eating chicken is a new type of risk for me.	42%	32%	12%	14%
The risk of getting sick with bird flu from eating chicken is increasing.	25%	38%	22%	15%

*Shaded areas designate largest response proportions.

BEHAVIOR

What are Americans doing now?

Most Americans continue to eat chicken

More than nine-in-ten (94%) Americans said they currently eat chicken. Only 1% reported that they were not eating chicken because of avian influenza and 5% said they were eating less chicken because of avian influenza.

Americans report that chicken in the United States is currently safe to eat.

To examine Americans’ perceptions of the current safety of chicken in the United States, the participants were asked to rate the safety of consuming chicken in various forms using a semantic differential scale where zero represented “not at all safe” and ten represented “completely safe”.

Not surprisingly, the respondents rated “chicken that was cooked to the recommended internal temperature” ($M=7.50$, $SD=2.31$; $Mdn=8.00$) and “fresh chicken you cook at home” as the most safe to eat ($M=7.44$, $SD=2.46$; $Mdn=8.00$). “Chicken that had a label certifying it as free from avian influenza”¹² ($M=7.18$, $SD=2.66$; $Mdn=8.00$) was rated nearly as safe. The middle tier of safety ratings included: “chicken that was a familiar brand” ($M=6.87$, $SD=2.50$; $Mdn=7.00$), “cooked chicken prepared from chickens certified as organic” ($M=6.80$, $SD=2.59$; $Mdn=7.00$), “cooked chicken that had been frozen first” ($M=6.79$, $SD=2.71$; $Mdn=7.00$), “chicken in canned soup” ($M=6.68$, $SD=2.78$; $Mdn=7.00$), and “chicken that’s been vaccinated against the avian influenza”¹³ ($M=6.64$, $SD=2.82$; $Mdn=7.00$). Rated as least safe were “chicken

12 This is a hypothetical question. While the industry has an extensive avian influenza testing program, no such products were on the market certified as avian influenza-free at the time of the interviews.

13 This is a hypothetical question. While an avian influenza vaccination for poultry exists, chickens in the United States have not routinely been vaccinated against the H5N1 virus.

that's been irradiated"¹⁴ ($M=5.89$, $SD=2.97$; $Mdn=6.00$) and "chicken from a fast food restaurant" ($M=5.86$, $SD=2.83$; $Mdn=6.00$).

What *would* Americans do if the threat of avian influenza increases?

Proximity of avian influenza affects Americans' likelihood of eating chicken.

The nearer avian influenza comes to the United States, the less likely Americans are to eat chicken. However, the results suggest that avian influenza does not necessarily have to emerge in the United States to affect poultry consumption. The respondents were asked how likely they would be to eat chicken in the United States if avian influenza was found in chickens in particular countries outside the United States. Respondents rated their likelihood of eating using a scale where zero represented "definitely would *not* eat" chicken and ten represented "definitely *would* eat" chicken (see Figure 7).

If avian influenza was discovered in chickens on farms in England, respondents rated the likelihood that they would eat chicken in the United States as 6.63 ($SD=3.11$). Americans said they are less likely to eat chicken in the United States if avian influenza were found in chickens on Canadian farms ($M=5.22$, $SD=3.35$), or if it were found on Mexican farms ($M=4.96$, $SD=3.42$).

Many Americans are unlikely to eat chicken if the avian influenza virus is found inside the United States.

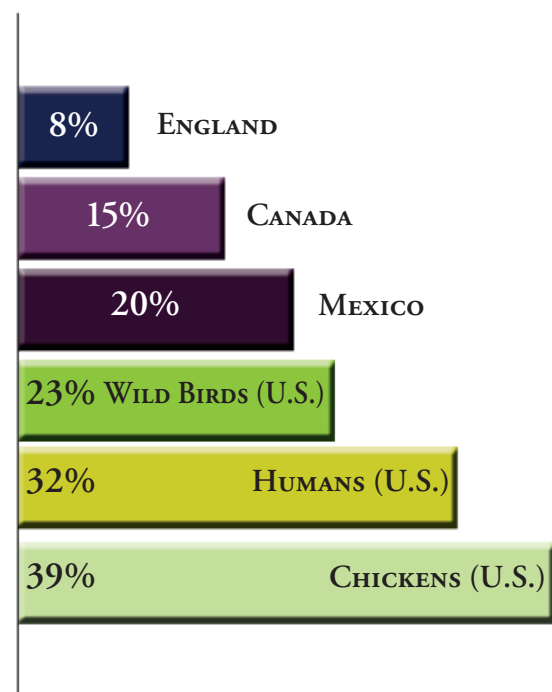
Americans said they are even less likely to eat chicken in the United States if avian influenza was found in wild birds in the United States¹⁵ ($M=4.42$, $SD=3.42$) or if it were found that someone got sick with avian influenza from eating chicken in the United States ($M=3.55$,

14 Many Americans know little about food irradiation, and it is therefore not surprising that 160 respondents were unable to give a rating of safety for irradiated chicken.

15 Respondents were assured that the highly pathogenic form of avian influenza, known as H5N1 has NOT been found in the United States.

$SD=3.33$). Not surprisingly, Americans reported being least likely to eat chicken in the United States if avian influenza was found in chickens on farms in the U.S. ($M=3.06$, $SD=3.22$).

FIGURE 7. PERCENTAGE OF AMERICANS REPORTING THEY DEFINITELY WOULD *NOT* EAT CHICKEN IF AVIAN INFLUENZA WAS FOUND IN . . .



Who is least likely to eat chicken?

Several factors were statistically significant predictors of who would be least likely to eat chicken if avian influenza was found in chicken on farms in the United States. Those least likely include those who are more worried about illness with avian influenza¹⁶; those who perceive a greater personal likelihood of infection with avian influenza¹⁷ and a greater

16 $B= -0.26$, $p<0.001$, $R^2=0.07$

17 $B= -0.14$, $p<0.001$, $R^2=0.02$

likelihood of infection for other Americans¹⁸. Participants who don't believe that cooking kills the avian influenza virus are also significantly less likely to eat chicken if avian influenza is found in chickens in the United States¹⁹. Moreover, women²⁰, those with less education²¹, and non-whites²² are less likely to eat chicken if avian influenza is found in chickens on farms in the United States. Notably, overall objective knowledge, age, income, and the geographic region were not significant predictors of the likelihood of eating chicken if avian influenza was found in chickens on farms in the United States.

Most chicken products would be rejected.

The participants were asked to imagine a hypothetical scenario in which they had heard that the United States Department of Agriculture had announced that avian influenza had been found in chickens on farms in the United States. They were then asked to rate how likely they would be to eat various chicken products in the United States given this situation. They responded using the same scale where zero represented "definitely would *not* eat" chicken and ten represented "definitely *would* eat" chicken.

The results suggest that most Americans would be reluctant to eat any chicken products in this scenario, rating each significantly below a mean of 5 (see Table 5). Moreover, 87% agreed that if chickens in the United States were infected with avian influenza, they would purchase other food products as substitutes (67% 'strongly agreed' and 21% 'somewhat agreed').

18 $B = -0.23, p < 0.001, R^2 = 0.04$
 19 $B = 0.18, p < 0.001, R^2 = 0.03$
 20 $B = -0.16, p < 0.001, R^2 = 0.03$
 21 $B = 0.13, p < 0.001, R^2 = 0.02$
 22 $B = -0.10, p < 0.001, R^2 = 0.01$

TABLE 5. IF BIRD FLU WAS FOUND IN CHICKENS ON U.S. FARMS, HOW LIKELY WOULD YOU BE TO EAT. . .

	n	M	SD
Certified AI-free chicken	1058	4.42 ¹	3.47
Chicken cooked to the proper temperature	1052	3.96	3.52
Cooked eggs	1042	3.96	3.63
Home-cooked chicken	1064	3.90	3.59
Chickens vaccinated against the AI	1055	3.83	3.34
A familiar brand of chicken	1058	3.44	3.30
Chicken in canned soup	1062	3.43	3.43
Organic chicken	1047	3.41	3.27
Previously frozen chicken	1056	3.35	3.31
Irradiated chicken	1040	3.16	3.22
Fast food chicken	1062	2.50	3.04

¹ 0=definitely would *not* eat; 10=definitely *would* eat

What would Americans do after recovery?

Many Americans report that they are unlikely to eat chicken again.

To investigate the likely impacts of recovery efforts, a sub-sample was formed of the 700 respondents who reported that they would be relatively unlikely to eat chicken if avian influenza were found in chickens on farms in the United States. This sub-sample was made up of those who rated their likelihood of eating chicken as less than or equal to four (on a scale of zero to ten where zero represented "definitely would *not* eat" chicken and ten represented "definitely *would* eat" chicken). For this sub-

sample, the mean rating of likelihood of eating chicken was very low ($M=0.98$ $SD=1.36$; $Mdn=0.00$) if avian influenza were found in chickens on farms in the United States.

These participants were then told that while still “imagining that bird flu had been found in chickens in the U.S., [to] please imagine that [they] later heard the USDA had done an investigation, and found that no chickens with bird flu had entered the food supply and no other chickens had become infected.” They were again asked to rate their likelihood of eating chicken in the United States using the same zero to ten scale.

The respondents were significantly more likely to eat chicken in this scenario than before being given safety reassurances²³. However, these participants reported that their likelihood of eating chicken in the future would still be moderately low ($M=4.46$, $SD=3.18$; $Mdn=5.00$). Only 10% said that they ‘definitely would eat’ chicken again. One-fifth (20%) of these participants²⁴ said they would *never* eat chicken again²⁵.

Participants who said they would eat chicken again reported that it would take an average of 144 days (nearly 5 months) for them to start eating it again ($SD=337.67$; $Mdn=42.00$). As a result, it would likely take some time for the market to recover.

Americans see health protection agencies as most trustworthy to give advice about avian influenza

The participants were asked to rate how much they trusted the advice about avian influenza that might be given by ten institutions or actors (Table 6). The United States Centers for Disease Control and Prevention (CDC) was rated as most trustworthy to provide avian influenza related advice. The World Health Organization (WHO) and the United States Department of Agriculture (USDA) were also rated highly and slightly (but significantly)

23 $t(699) = -29.19, p < 0.0001$

24 $n=137$ (11% of all 1,200 participants)

25 Includes 19% of participants who said ‘definitely would not eat’ chicken again and 1% of participants who reported something other than ‘definitely would not eat’ chicken again, but also said ‘never’ when asked how long it would take to begin eating chicken again.

above the United States Food and Drug Administration (FDA). Chicken farmers in the United States were given a higher rating than those of chicken processors or the United States Department of Homeland Security. Least trusted to give advice about avian influenza were the news media, President Bush, and supermarkets.

TABLE 6. TRUST THE IN THE ADVICE ABOUT AVIAN INFLUENZA FROM. . .

	n	M	SD
The CDC	1107	7.22 ¹	2.47
The WHO	1087	6.48	2.64
The USDA	1114	6.36	2.60
The FDA	1112	6.16	2.76
U.S. chicken farmers	1109	5.19	2.64
U.S. chicken processors	1093	4.60	2.79
U.S. Dept. of Homeland Security	1091	4.62	3.06
The news media	1117	4.28	2.71
President Bush	1104	4.28	3.49
Supermarkets	1107	4.20	2.69

¹ 0=no trust at all; 10= complete trust

CONCLUSIONS

Clearly, avian influenza is on the national agenda. Most Americans say they have heard of bird flu and most have had a conversation about it with someone else. Yet, despite the considerable media attention devoted to it, most Americans say they don’t know very much about avian influenza.

Unfortunately, the results of the survey confirm this assessment. Half of Americans received a failing grade on an objective test of basic knowledge about avian influenza; correctly answering fewer than 60% of the questions posed.

Many appear to be confused about the

current status of avian influenza infections in the United States. While most Americans seem to know that there have been cases of highly pathogenic H5N1 avian influenza in people, wild birds, and poultry in countries outside of the United States, many seem unaware that there have been no reported cases within the United States. Less than two-thirds seem aware that no human cases have been reported in the country, only about six-in-ten are aware that no cases have been reported in chickens, and less than half appear to know that no cases have been reported in wild birds. While some of this uncertainty may be the result of failing to differentiate avian influenza from seasonal influenza, the fact remains that many Americans are confused about the status of cases of avian influenza in the United States.

Despite this confusion, most Americans aren't particularly worried about becoming sick with avian influenza in the near term. Most judge their current likelihood of infection with avian influenza to be relatively low. In fact, most of the respondents seem to believe that other Americans are at substantially greater personal risk of infection than they are.

This optimistic bias (Weinstein, 1980, 1987), may constitute a barrier to attempts to motivate the public to appropriately prepare for the possibility of an outbreak of avian influenza in the United States. If people see the risk of avian influenza as applying only to others, they may be reluctant to expend the time, effort, or resources necessary to adequately prepare.

At present, most Americans view chicken as safe to eat. Nearly 95% of all Americans say they eat chicken, and few say they have been dissuaded from doing so because of the threat of avian influenza. Not surprisingly, they also currently rate chicken products in the United States as safe to eat.

However, the majority of Americans also endorse the idea that the risk of becoming sick with avian influenza from eating chicken is increasing. Moreover, they believe that if chickens infected with avian influenza were discovered in the U.S. food supply, it could have long-term, catastrophic consequences. On a personal level, nearly two-thirds believe that if they eat chicken infected with the avian influenza they will become sick with the avian

influenza, and one-quarter believe that if they were to become sick with avian influenza from eating infected chicken, it is certain that they will die.

As a result, consistent with European consumer reactions to the discovery of avian influenza in birds in Europe, if avian influenza is found in chickens in the United States, American consumers say that they will likely reject most chicken products and purchase other foods as substitutes. Nearly 40% of Americans say they will stop eating chicken altogether.

The data also suggest that consumer confidence in the safety of poultry would require substantial time to recover. Even under ideal conditions, where it may be possible to assure people that no infected chicken products have entered the food supply and that U.S. farms are free of infected birds, the majority of consumers would likely remain wary.

Indeed, in responding to a scenario that included these specific reassurances, most of the respondents said they would still be relatively unlikely to eat chicken and one-fifth said they would never eat it again. Moreover, those who said they would eat chicken again said it would take an average of 5 months before they did so.

For example, the results of the survey suggest that avian influenza does not necessarily have to be found in the United States to affect American consumer behavior. The data show that if cases of avian influenza in chicken are found in either Canada or Mexico, many Americans say they will stop eating chicken.

It is important to note that consumers' behaviors often diverge from what they say they will do in specific situations. However, based on the data, it is likely that if avian influenza emerges in the United States, the domestic consumption of poultry will drop, perhaps dramatically. The resulting economic and social impacts would likely be substantial.

On average, Americans purchase more than 86 pounds of chicken a year per capita; nearly 26 billion pounds a year in total (USDA/ ERS, 2007). A substantial drop in domestic consumer demand would result in significant economic losses to producers and retailers of chicken products as the direct result of lost sales and the costs of the disposal of poultry products left

unsold. With the likely simultaneous closure of export markets for American poultry products, there would be little ability to recoup those losses.

The social and nutritional costs would also likely be significant. Chicken serves as a familiar, low-cost source of protein for many American families (Buzby and Farah, 2006). Indeed, the National Chicken Council estimates that 92% of Americans typically eat chicken at least once every two weeks (Liedahl, 2006) and the USDA estimates that the per capita consumption of chicken in the United States has more than doubled since 1970 (USDA/ERS, 2007; Buzby and Farah, 2006). Loss of confidence in the safety of poultry would likely result in increases in the prices of alternative sources of animal protein resulting from higher consumer demands for substitutes for chicken products.

According to the USDA if highly pathogenic avian influenza were detected in the United States, “the chance that infected poultry or eggs entering the food chain would be extremely low because of the rapid onset of symptoms in poultry as well as the safeguards in place, which include testing of flocks, and Federal inspection programs” (USDA, 2006b). Moreover, the USDA states, “cooking poultry, eggs, and other poultry products to the proper temperature and preventing cross-contamination between raw and cooked food is the key to safety” (2006b). The results of this survey suggest that much of the American public have not yet embraced these and other key messages.

For example, only about two-thirds of Americans seem aware that little (if any) of the chicken sold in grocery stores in the United States is imported from other countries. For those unaware of this fact, the idea that infected poultry might be imported from countries where avian influenza is present might lead to the conclusion that some chicken sold in the United States could be unsafe to eat. As such, targeted messages should be developed, aimed at informing consumers that the majority of chicken sold in the United States is produced domestically and that poultry products from countries with reported outbreaks of avian influenza are banned from import.

If avian influenza does emerge in the United States, there may be other key messages

useful to help consumers understand and appropriately manage the risk of infection from food-borne avian influenza. For example, the majority of Americans are aware that animal to human transmission of the avian influenza virus occurs as the result of contact with live infected birds or feces from infected birds (CDC, 2007). However, while a variety of clinical symptoms makes it relatively easy to identify domestic poultry infected with avian influenza resulting in the immediate culling of infected and potentially exposed birds (USDA, 2006, 2007; United States Department of Agriculture Animal and Plant Health Inspection Service [USDA/ APHIS] 2006), few believe that live chickens infected with avian influenza are easily distinguishable from healthy birds suggesting that infected poultry might readily enter the food supply.

In contrast, the majority of Americans correctly believe that the avian influenza virus is present in the uncooked meat of an infected chicken. Yet, nearly one-quarter mistakenly think that safety inspectors can visually determine when raw meat is infected and should not be consumed. In the interests of protecting public health, this false confidence may need to be corrected. According to the CDC “there is no evidence that people have been infected with bird flu by eating safely handled and properly cooked poultry or eggs” (2007). However, effective messages will likely be needed to remind consumers to properly handle raw poultry and to practice basic food safety techniques designed to prevent potential cross-contamination with the avian influenza virus.

One of the key messages promulgated by both government agencies and the poultry industry is that even chicken infected with avian influenza is safe to eat if properly cooked to at least 165° F (FDA, 2004; National Advisory Committee on Microbiological Criteria for Foods [NACMCF], 2007). Yet, less than half of Americans believe that cooking chicken to the recommended temperature kills the avian influenza virus and only four-in-ten believe that the avian influenza virus is not transmissible to humans from eating fully cooked chicken or eggs.

Since the avian influenza virus is invisible, should avian influenza emerge in poultry in

the United States, proper cooking is one of the few control measures that consumers would be able to employ to ensure the safety of the food they eat. Doubting the efficacy of proper cooking diminishes a sense of personal control over the threat and removes the possibility of a measured response to reducing risk. Instead, consumers are likely to try to eliminate the risk entirely by avoiding consumption of poultry altogether. Indeed, the data show that those who do not believe that proper cooking kills the avian influenza virus are more likely to say they would not eat chicken if avian influenza were found in the United States.

Women, those with less education and less overall objective knowledge were significantly less likely to know that cooking kills the avian influenza virus. Consequently, targeted messages will likely be necessary to reach these audiences. However, even if consumers can be convinced that proper cooking kills the avian influenza virus, getting consumers to act on this information to reduce the risk of infection may be difficult. FDA data suggests that fewer than 60% of Americans own a meat thermometer and only 12% always use it when they cook chicken or chicken parts (FDA/FSIS, 2002).

Clearly, targeted messages will be essential to ensure that people have the information they need to make informed choices about purchasing, preparing, and consuming poultry products, should avian influenza emerge in the United States. Such messages will enhance the efforts of government and industry to prevent and prepare for the likely economic disruption that would result from an outbreak of avian influenza in poultry in the United States.

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QUESTIONNAIRE

The following is a replication of the survey questionnaire administered to participants. Please note that not all questions asked of participants are discussed in this report. The results of the participants' responses to questions not included in this report will be published in future papers. These questions are provided as a reference for readers interested in specific question wording.

Introduction

Hi, I'm (first and last name) and I am calling on behalf of Rutgers University. I would like to ask you some questions about avian influenza, which is also called the bird flu. It should only take about 15 minutes. We're only looking for your opinions. Because we must interview an equal number of men and women, may I please speak:

CATI: RANDOMLY ASSIGN 50% OF THE RESPONDENTS (I.E. N=600) TO BE ADMINISTERED INTRO A, AND 50% (I.E. N=600) TO BE ADMINISTERED INTRO B. (NOTE: IF THE QUOTA HAS ALREADY BEEN FILLED FOR ONE OF THE INTROS, SET UP PROGRAM TO AUTOMATICALLY ASSIGN THAT RESPONDENT TO THE OTHER INTRO.)

A. . . . with a man, 18 years of age or older who had the most recent birthday in your household? [IF MALE NOT AVAILABLE ARRANGE CALLBACK. IF NO MALES EXIST, ASK:] May I speak to the woman who is 18 years or older who had the most recent birthday?

B. . . . with a woman, 18 years of age or older who had the most recent birthday in your household? [IF FEMALE NOT AVAILABLE ARRANGE CALLBACK. IF NO FEMALES EXIST, ASK:] May I speak to the man who is 18 years or older who had the most recent birthday?

[Record sex of respondent]

1 = Male

2 = Female

[IF NEW PERSON:]

Hello, I'm (first and last name) I am calling on

behalf of Rutgers University. I would like to ask you some questions about avian influenza, which is also called the bird flu. It should only take about 15 minutes. We're only looking for your opinions.

Self-reported knowledge & awareness

Though there are different types of influenza or flu viruses, for these questions we're specifically talking about bird flu. We're only talking about the type of bird flu caused by H5N1, also known as highly pathogenic bird flu.

1) How much would you say you've heard or read about the "bird flu"? Would you say you've heard. . .

[READ RESPONSES:

1= A great deal

2= A lot

3= Some

4= A little, or

5= Nothing at all

[DO NOT READ:

8= Don't know

9= Refused

2) How much would you say you know about the bird flu? Would you say you know. . .

[READ RESPONSES:

1= A great deal

2= A lot

3= Some

4= A little, or

5= Nothing at all

[DO NOT READ:

8= Don't know

9= Refused

[CATI= IF Q1 = 5 AND Q2 = 5, SKIP TO Q112]

3) How often would you say you've talked with others about the bird flu? Would you say you've talked about it. . .

[READ RESPONSES:

1= Frequently

2= Occasionally

3= A few times

4= Once or twice

5= Never

[DO NOT READ:

8= Don't know

9= Refused

Likelihood & worry

4) On a scale of 0 to 10, where 0 is "no risk at all" and 10 is "an absolute risk", how much of a risk would you say you have for becoming infected with the bird flu within the next year?

PROBE: YOUR BEST GUESS IS FINE.
[OPEN CODE]

98= Don't know
99= Refused

5) Again, on a scale of 0 to 10, where 0 is "no risk at all" and 10 is "an absolute risk", how much of a risk would you other people in the U.S. have for becoming infected with the bird flu within the next year?

PROBE: YOUR BEST GUESS IS FINE.
[OPEN CODE]

98= Don't know
99= Refused

6) On a scale of 0 to 10, where 0 is "not at all worried" and 10 is "extremely worried", how worried would you say you are about becoming sick with the bird flu.

PROBE: YOUR BEST GUESS IS FINE.
[OPEN CODE]

98= Don't know
99= Refused

{END OF SERIES-----}

Knowledge of cases of avian influenza

Now, based on what you know, please tell me which of the following HAVE gotten sick with the bird flu anywhere in the world. If you're not sure, just tell me you don't know.

[INTERVIEWER INSTRUCTION: DO NOT REREAD RESPONSE OPTIONS, BUT DO ACCEPT DON'T KNOW AS FIRST RESPONSE.]

7) The first is chickens. As far as you know, have chickens gotten sick with the bird flu anywhere in the world?

[DO NOT READ:
1= Yes
2= No
3= Probably
8= Don't know
9= Refused

7A. If "probably", record 3 and probe for yes, no or don't know; record 2nd response.

[DO NOT READ:
4= Yes
5= No
8= Don't know
9= Refused

[CATI: IF Q7= 1, ASK Q8. IF Q7= 2,8, OR 9, SKIP TO Q9]

8) As far as you know, have chickens gotten sick with the bird flu in the U.S.?

[Read Responses:	[Do not read:
1= Yes	8= Don't know
2= No	9= Refused

11) As far as you know, have wild birds gotten sick with the bird flu (anywhere in the world)?

[DO NOT READ:
1= Yes
2= No
3= Probably
8= Don't know
9= Refused

11A. If "probably", record 3 and probe for yes, no or don't know; record 2nd response.

[DO NOT READ:

- 4= Yes
- 5= No
- 8= Don't know
- 9= Refused

[CATI: If Q11= 1, ASK Q12. If Q11= 2,8, OR 9, SKIP TO Q13]

12) Have wild birds gotten sick with the bird flu in the U.S.?

[Read Responses:

- 1= Yes
- 2= No

[Do not read:

- 8= Don't know
- 9= Refused

13) Have People gotten sick with the bird flu (anywhere in the world)?

[DO NOT READ:

- 1= Yes
- 2= No
- 3= Probably
- 8= Don't know
- 9= Refused

13A. If "probably", record 3 and probe for yes, no or don't know; record 2nd response.

[DO NOT READ:

- 4= Yes
- 5= No
- 8= Don't know
- 9= Refused

[CATI: If Q13= 1, ASK Q14. If Q13= 2,8, OR 9, SKIP TO Q15]

14) Have people gotten sick with the bird flu in the U.S.?

[Read Responses:

- 1= Yes
- 2= No

[Do not read:

- 8= Don't know
- 9= Refused

General avian influenza virus knowledge

[CATI RANDOMIZE Q15-Q20]

Okay great. Now, please tell me if the following statements are true or false. If you're definitely sure that the statement is true say "true", if you're definitely sure that it's false say "false", otherwise please tell me if it's "likely true", "likely false", or that you don't know.

[INTERVIEWER INSTRUCTION: Do NOT REREAD DON'T KNOW, BUT DO ACCEPT DON'T KNOW AS FIRST RESPONSE.]

15) Much of the chicken in US grocery stores is imported from other countries.

[Read Responses:

- 1= True
- 2= Likely true
- 3= Likely false
- 4= False

[Do not read:

- 8= Don't know
- 9= Refused

16) The bird flu virus is present in the uncooked meat of an infected chicken.

[Read Responses:

- 1= True
- 2= Likely true
- 3= Likely false
- 4= False

[Do not read:

- 8= Don't know
- 9= Refused

17) Cooking chicken to recommended temperatures kills the bird flu virus.

[Read Responses:

- 1= True
- 2= Likely true
- 3= Likely false
- 4= False

[Do not read:

- 8= Don't know
- 9= Refused

18) Freezing chicken kills the bird flu virus.

[Read Responses:

- 1= True
- 2= Likely true
- 3= Likely false
- 4= False

[Do not read:

- 8= Don't know
- 9= Refused

19) Irradiating raw chicken kills the bird flu virus.

[INTERVIEWER INSTRUCTION: BY IRRADIATING CHICKEN WE MEAN THE PROCESS OF EXPOSING FOOD TO CONTROLLED AMOUNTS OF IONIZING RADIATION, WHICH CAN REDUCE DISEASE CAUSING GERMS IN FOOD. WE DO NOT MEAN MICROWAVING, WE MEAN IRRADIATING CHICKEN AT THE FACTORY BEFORE IT IS SOLD]

- | | |
|------------------|---------------|
| [Read Responses: | [Do not read: |
| 1= True | 8= Don't know |
| 2= Likely true | 9= Refused |
| 3= Likely false | |
| 4= False | |

20) Vaccinating live chickens against the bird flu prevents the spread of the bird flu virus to humans.

- | | |
|------------------|---------------|
| [Read Responses: | [Do not read: |
| 1= True | 8= Don't know |
| 2= Likely true | 9= Refused |
| 3= Likely false | |
| 4= False | |

{END OF SERIES-----}

Current eating behaviours

Great. Now, I would like to talk to you about the food you eat.

21) Do you eat chicken?

- [DO NOT READ:
- 1= Yes
 - 2= No
 - 8= Don't know
 - 9= Refused

[CATI: IF Q21= 1, 8, OR 9 SKIP TO Q24; IF Q21=2 ASK Q22]

22) Is there a reason why don't you eat chicken?

- MULTIPLE CODE
 PROBE: ANYTHING ELSE?
 [DO NOT READ:
- 1= Bird Flu/ Avian Influenza
 - 2= Vegetarian
 - 3= Vegan
 - 4= Cholesterol
 - 5= Allergic
 - 6= Don't like them (taste/texture)
 - 7= Money/cost
 - 8= Animals rights/ welfare
 - 9= Other_____
 - 10= Food Safety

- PROBE: WHAT IS IT SPECIFICALLY MAKES THAT YOU FEEL IT IS UNSAFE?
- 11= Bird Flu/ Avian Influenza
 - 12= Food poisoning
 - 13= Salmonella
 - 14= Hormones
 - 15= Antibiotics
 - 16= Other_____
 - 98= Don't know
 - 99= Refused

[CATI: IF Q21=2 AND Q22= 1 OR 10 ASK Q23, ELSE IF Q21=2 AND Q22= ANYTHING OTHER THAN 1 OR 10 SKIP TO Q29; IF Q21= 1, 8, OR 9 SKIP Q23 ASK Q24]

23) Before you stopped eating chicken because of the bird flu, about how many meals did you eat that include chicken meat or chicken stock?

[INTERVIEWER INSTRUCTION: WE ARE NOT INCLUDING MEALS THAT ARE MAINLY EGGS LIKE QUICHE AND SCRAMBLED EGGS.]

PROBE: YOUR BEST GUESS IS FINE.
[OPEN CODE]

- 98= Don't know
- 99= Refused

24) During an average week, about how many meals do you eat that include chicken meat or chicken stock?

[INTERVIEWER INSTRUCTION: WE ARE NOT INCLUDING MEALS THAT ARE MAINLY EGGS LIKE QUICHE AND SCRAMBLED EGGS.]

PROBE: YOUR BEST GUESS IS FINE.

[OPEN CODE]

98= Don't know

99= Refused

25) Have you changed the amount of chicken you eat because of bird flu?

[DO NOT READ:

1= Yes

2= No

8= Don't know

9= Refused

[CATI: IF Q25= 1, 8, OR 9 ASK Q26; IF Q25= 2 SKIP TO Q29]

26) Would you say you're eating more or less chicken?

[INTERVIEWER INSTRUCTION: IF ASKED, WE MEAN ARE YOU EATING MORE OR LESS CHICKEN BECAUSE OF THE BIRD FLU?]

[DO NOT READ:

1= More

2= Less

3= About the same

8= Don't know

9= Refused

[CATI: IF Q26=1 ASK Q27; IF Q26=2 ASK Q28, IF Q26= 3, 8, OR 9 SKIP TO Q29]

27) About how much more chicken are you eating?

[INTERVIEWER INSTRUCTION: IF ASKED, WE MEAN ARE YOU EATING MORE CHICKEN BECAUSE OF THE BIRD FLU?]

[READ RESPONSES:

1= A lot more

2= Somewhat more

3= A little more

[DO NOT READ:

8= Don't know

9= Refused

28) About how much less chicken are you eating?

[INTERVIEWER INSTRUCTION: IF ASKED, WE MEAN ARE YOU EATING LESS CHICKEN BECAUSE OF THE BIRD FLU.]

[READ RESPONSES:

1= A lot less

2= Somewhat less

3= A little less

[DO NOT READ:

8= Don't know

9= Refused

Knowledge about avian influenza transmission

[CATI: RANDOMIZE Q29-Q36 DO NOT RANDOMIZE Q37]

Okay, now please tell me if the following statements about how people can get sick with the bird flu are true or false. Again, if you're definitely sure that the statement is true say "true", if you're definitely sure that it's false say "false", otherwise please tell me if it's "likely true", "likely false", or that you don't know.

[REPEAT INTRO: PEOPLE CAN GET SICK WITH THE BIRD FLU BY. . .]

[INTERVIEWER INSTRUCTION: DO NOT REREAD DON'T KNOW, BUT DO ACCEPT DON'T KNOW AS FIRST RESPONSE.]

29) People can get sick with the bird flu by eating fully cooked meat from an infected chicken.

30) . . . from mosquito bites.

31) People can get sick with the bird flu by eating undercooked meat from an infected chicken.

32) . . . touching raw meat from an infected chicken.

33) People can get sick with the bird flu by eating fully cooked eggs from an infected chicken.

34) . . touching live birds infected with bird flu.

[INTERVIEWER INSTRUCTION: BY LIVE BIRDS, WE MEAN ANY LIVE BIRDS]

35) . . .contact with feces from an infected bird.

36) People can get sick with the bird flu from other people infected with bird flu.

37) Currently, bird flu is spread easily from person to person.

{END OF SERIES-----}

Trust

[CATI: ASK ALL]

[CATI: RANDOMIZE Q44-Q53]

On a scale of 0 to 10, where 0 means no trust at all and 10 means complete trust, how much would you say you trust the advice about bird flu given by . . .

[REPEAT INTRO: HOW MUCH WOULD YOU SAY YOU TRUST THE ADVICE ABOUT BIRD FLU GIVEN BY . . .]

[OPEN CODE]

98= Don't know
99= Refused

44) ...President Bush.

45) . . .Supermarkets.

46) . . .The U.S. Department of Agriculture

47) . . . Farmers in the U.S. who raise chickens

48) . . .The Food and Drug Administration

49) . . . The Department of Homeland Security

50) . . .The Centers for Disease Control

51) . . .The World Health Organization

52) . . .Chicken processors like Purdue and Tysons.

53) . . .The news media

{END OF SERIES-----}

Perceived risk associated with eating chicken

[CATI: ASK ALL]

[CATI: RANDOMIZE Q55-73]

This is great! We're almost done, and again, there are no right or wrong answers. Now please tell me how much you agree or disagree with the following statements.

54) If I eat chicken infected with bird flu, it is certain I will get sick with the bird flu. Would you say you...?

[READ RESPONSES:

1= strongly agree,

2= somewhat agree,

3= somewhat disagree, or

4= strongly disagree?

[DO NOT READ:

8= Don't know

9= Refused

55) If I get sick with the bird flu from eating chicken, it is certain I will die.

56) If chicken was infected with bird flu in the U.S., I would buy other food products as substitutes.

57) Chickens infected with the bird flu in the U.S. food supply could kill many people in a short period of time.

58) The idea of getting sick with bird flu from eating chicken fills me with dread.

59) I can think calmly about getting sick with bird flu from eating chicken.

60) The risk of getting sick with bird flu from eating chicken is something I have learned to live with.

61) Getting sick with bird flu from eating chicken is a new type of risk for me.

62) Scientists know a lot about how chicken can become infected with bird flu.

63) I know a lot about how chicken can become infected with bird flu.

64) Getting sick with bird flu from eating chicken would kill me immediately.

65) There are things I can do to protect myself from getting sick with bird flu.

66) If chickens in the U.S became infected with bird flu, widespread cases of infections in people could be controlled.

67) Getting sick with bird flu from eating chicken is a risk that could threaten future generations of people.

68) I am personally at risk from getting sick with bird flu from eating chicken.

69) Chickens infected with bird flu in the U.S. food supply would cause a global catastrophe.

70) It is easy to tell when live chickens are infected with bird flu by looking at them.

71) When raw chicken is infected with bird flu, safety inspectors can visibly see that it should not be consumed.

72) The risk of getting sick with bird flu from eating chicken is increasing.

73) The risk of getting sick with bird flu from eating chicken can be easily reduced.

{END OF SERIES-----}

Current perceived safety

[CATI: IF Q21=1 OR Q21=2 AND Q22=1 OR 11 ASK Q75-Q111; ELSE IF Q21= 2 AND Q22 DOES NOT =1 OR 11 SKIP TO Q112]

[CATI: RANDOMIZE Q75-Q85]

This is great! Your opinions are really helpful to us!

Now, I'd like to ask you about how safe you think it is to eat cooked chicken products in the United States. So, thinking about the bird flu and using a scale of 0 to 10, where 0 is not at all safe and 10 is completely safe, how safe would you it is to eat. . .

[REPEAT INTRO: AGAIN, THINKING ABOUT THE BIRD FLU, HOW SAFE WOULD YOU SAY IT IS TO EAT . . .]

75) Again, thinking about the bird flu, how safe is it to eat cooked chicken prepared from chickens certified as organic?

[OPEN CODE]

98= Don't know

99= Refused

77) Again, thinking about the bird flu, how safe is it to eat chicken from a fast food restaurant

78) Fresh chicken you cook at home?

79) Chicken in canned soup?

80) Again, thinking about the bird flu, how safe is it to eat cooked chicken that had been frozen first?

81) Chicken that's been vaccinated against the bird flu?

82) Chicken that was cooked to the recommended internal temperature?

83) Chicken that had a label certifying it as free from bird flu?

84) Chicken that was a familiar brand?

85) Chicken that's been irradiated

[INTERVIEWER INSTRUCTION: BY IRRADIATING CHICKEN WE MEAN THE PROCESS OF EXPOSING CHICKEN TO CONTROLLED AMOUNTS OF RADIATION, WHICH CAN REDUCE DISEASE CAUSING GERMS IN CHICKEN MEAT. DO NOT READ: WE DO NOT MEAN MICROWAVING, WE MEAN IRRADIATING CHICKEN AT THE FACTORY BEFORE IT IS SOLD]

{END OF SERIES-----}

Status of avian influenza in the U.S.

[CATI: READ TO ALL RESPONDENTS]

As of now, the highly pathogenic form of bird flu, known as H5N1 has NOT been found in the U.S., and there have been NO cases of the that type of bird flu detected here. Again, no cases of the bird flu in humans, birds, or any other animals have been found in the U.S.

Proximity and likelihood of eating

[CATI: RANDOMIZE Q86-Q92]

86) Now, imagining that bird flu was found in chickens on farms in England? On a scale of 0 to 10, where 0 means definitely would not eat chicken and 10 means definitely would eat chicken, how likely would you be to eat chicken in the U.S.?

PROBE: YOUR BEST GUESS IS FINE.
[OPEN CODE]

998= Don't know
999= Refused

87) Imagine that bird flu was found in chickens on farms in Canada? How likely would you be to eat chicken in the U.S.?

88) Imagine that bird flu was found in chickens on farms in Mexico?

89) Imagine that bird flu was found in wild birds in the U.S.? How likely would you be to eat chicken in the U.S.?

91) If Bird flu was found in chickens on farms in the U.S.?

92) Imagine that someone got sick with bird flu from eating chicken in the U.S.? How likely would you be to eat chicken in the U.S.?

{END OF SERIES-----}

Hypothetical eating behaviour

[CATI: RANDOMIZE Q96-Q108]
[CATI: READ INTRO HERE]

Okay, I am going to ask you a few questions about how you would feel if the highly pathogenic form of bird flu was in the U.S. We will be talking about a HYPOTHETICAL situation. However, please answer the questions based on how you WOULD feel in these situations IF bird was in the U.S. right now.

Now, please imagine that you heard that the USDA announced that bird flu had been found in chickens on U.S. farms, using a scale of 0 to 10, where 0 means definitely would not eat chicken and 10 means definitely would eat chicken, how likely would you be to eat chicken in the U.S. if it was. . .

[REPEAT INTRO: AGAIN, IMAGINING BIRD FLU WAS FOUND IN CHICKENS ON U.S. FARMS, (AND USING THE SCALE OF 0 TO 10, WHERE 0 MEANS DEFINITELY WOULD NOT EAT CHICKEN AND 10 MEANS DEFINITELY WOULD EAT CHICKEN) HOW LIKELIHOOD WOULD YOU SAY YOU WOULD BE TO EAT. . .]

97) Again, if bird flu was found in chickens on U.S. farms, how likely would you be to eat cooked chicken prepared from chickens certified as organic?

99) Again, if bird flu was found in chickens on U.S. farms, how likely would you be to eat chicken from a fast food restaurant

100) Fresh chicken you cook at home?

101) Fresh eggs you cook at home?

102) Chicken in canned soup?

103) Again, if bird flu was found in chickens on U.S. farms, how likely would you be to eat cooked chicken that had been frozen first?

104) Chicken that's been vaccinated against the bird flu?

105) Chicken that was cooked to the recommended internal temperature

106) Again, if bird flu was found in chickens on U.S. farms, how likely would you be to eat chicken that had a label certifying it as free from bird flu?

107) Chicken that was a familiar brand?

108) Chicken that's been irradiated

[INTERVIEWER INSTRUCTION: BY IRRADIATING CHICKEN WE MEAN THE PROCESS OF EXPOSING CHICKEN TO CONTROLLED AMOUNTS OF RADIATION, WHICH CAN REDUCE DISEASE CAUSING GERMS IN CHICKEN MEAT. DO NOT READ: WE DO NOT MEAN MICROWAVING, WE MEAN IRRADIATING CHICKEN AT THE FACTORY BEFORE IT IS SOLD]

{END OF SERIES-----}

Hypothetical likelihood of returning to eating chicken

[CATI: IF Q91 ≤ 4 ASK Q109-111; ELSE IF Q91 > 4 SKIP TO Q112]

109) Great. We're almost finished. Earlier you indicated that if you'd heard that bird flu had been found in chickens on U.S. farms you would be unlikely to eat chicken. Again, imagining that bird flu had been found in chickens in the U.S., please imagine that you later heard the USDA had done an investigation, and found that NO chickens with bird flu had entered the food supply and no other chickens had become infected. Based on this information, and using the same scale where 0 means definitely would not eat and 10 means definitely would eat, how likely would you say you would be to start eat chicken?

PROBE: YOUR BEST GUESS IS FINE.
[OPEN CODE]

98= Don't know
99= Refused

[CATI: IF Q109= 98 OR 99; ASK Q110, ELSE SKIP TO 112]

110) And would you say you would start eating chicken again in a matter of days, weeks, months, or years?

[DO NOT READ:
1= days
8= don't know
2= weeks
9= refused
3= months
4= years
5= never

[CATI: IF Q110= 1,2,3,OR 4, ASK Q109]; ELSE SKIP TO 112]

111) How many [CATI: INSERT RESPONSE FROM Q110] would you say it would take?

PROBE: YOUR BEST GUESS IS FINE.
[OPEN CODE]

998= Don't know
999= Refused

Demographics

112) Finally I have just a few questions for classification purposes only. What was your age on your last birthday?

[OPEN CODE]

97 = 97 or older,
98= Don't know
99= Refused

[CATI: IF Q112= 98 OR 99 ASK Q113, ELSE SKIP TO Q114]

113) I don't need to know exactly. Are you:

[READ RESPONSES:	[DO NOT READ:
1= 18 to 24	98= Don't know
2= 25 to 34	99= Refused
3= 35 to 44	
4= 45 to 54	
5= 55 to 64	
6= 65 to 74	
7= 75 to 84	
8= 85 or older	

114) What is the last year or grade of school you completed?

[PROBE FOR THE LAST LEVEL OF FORMAL EDUCATION.]

[DO NOT READ:

- 1= no formal schooling
- 2= 1st thru 7th grade
- 3= 8th grade
- 4= some high school (at least 9th but didn't finish 12th)
- 5= high school graduate/GED
- 6= some college/2 year Associate Degree
- 7= four year college degree
- 8= some professional or graduate school
- 9= graduate or professional degree [MD, PhD, JD, MS]
- 98= Don't know
- 99= Refused

115) Are you currently single, married, unmarried but living with a partner, separated, divorced or widowed?

[DO NOT READ:

- 1= Single and never married
- 2= Married
- 3= Unmarried but living with a partner
- 4= Separated
- 5= Divorced
- 6= Widowed
- 8= Don't know
- 9= Refused

116) Are you of Hispanic origin or descent?

[DO NOT READ:

- 1= Yes
- 2= No
- 8= Don't know
- 9= Refused

117) Are you white, black/African-American, Asian or Pacific Islander, Native American or of some other race?

[DO NOT READ:

- 1= White
- 2= Black/African-American
- 3= Asian or Pacific Islander
- 4= Native American
- 5= Other (specify _____)
- 8= Don't know
- 9= Refused

118) Would you say your total household income for 2005 was below \$50,000 or was it \$50,000 or above?

[DO NOT READ:

- 1= below \$50,000
- 2= \$50,000 or above]
- 8= Don't know
- 9= Refused

[CATI: IF Q118=1 ASK Q119 THEN SKIP Q120; IF Q118=2 ASK Q120]

119) Was it...

[READ RESPONSES:

- 1= under \$25,000
- 2= \$25,000 to \$35,000
- 3= or \$35,000 to \$50,000

[DO NOT READ:

- 8= Don't know
- 9= Refused

120) Was it...

[READ RESPONSES:

- 1= \$50,000 to \$75,000
- 2= \$75,000 to \$100,000
- 3= \$100,000 to \$125,000
- 4= or \$125,000 or more

[DO NOT READ:

- 8= Don't know
- 9= Refused



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