

## Article

# Accuracy of Risk Perception of Zoonoses Due to Intensive Animal Farming and People's Willingness to Change Their Animal Product Consumption

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**Abstract:** Zoonoses have become more frequent and intense. As intensive animal farming plays a role in the emergence of zoonoses, the increase in intensive animal farming increases the risk of future zoonotic outbreaks. This raises the question of to what extent people are aware that intensive animal farming poses a risk to zoonoses. Furthermore, if people would be made aware, would they be willing to take protective measures, such as reducing their animal food consumption? This was investigated in a representative descriptive study of 1009 Dutch citizens. We measured participants' perception of the risk of intensive animal farming and their perception of the way animals are treated. We measured their willingness to consume fewer animal products and their opinions on governments banning intensive animal farms. Additionally, participants estimated the percentage of meat from intensive farms that they consume. The main results showed that most participants were aware that zoonoses can occur through intensive animal farming, but not where their meat comes from. The majority of participants were willing to change their animal consumption behavior if this could reduce future zoonotic outbreaks.

**Keywords:** zoonoses; intensive animal farming; animal products; consumer behavior; behavior change



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## 1. Introduction

During the ongoing COVID-19 pandemic, people have mainly focused on vaccines as a solution. Not much attention has been given to preventing future zoonoses in order to achieve a sustainable future. This raises the question of to what extent people are aware about the conditions that increase the risk of zoonoses and whether they are willing to take protective measures when they are aware.

Zoonoses are defined as diseases and infections that are naturally transmitted from vertebrate and invertebrate animals to humans and vice versa [1,2]. These diseases and infections can be caused by all types of pathogens, such as viruses, bacteria, and parasites [1,3]. A wide variety of animals, including pets, livestock, wildlife, and humans, are possible hosts for these pathogens [3]. People can be infected in many different ways: via direct contact with infected animals or infected animal materials; via food, water, or air; or via arthropods (e.g., mosquitos, ticks).

Seventy-five percent of all emerging pathogens that cause diseases and infections in humans originate from animals or their products (i.e., [4]). As such, zoonoses are considered as one of the most critical threats to public health [1]. The direct consequences of zoonoses are described in terms of morbidity and mortality; indirect consequences include the impact on health professionals, citizens, and the economy [3,5]. Thus far, more than 290 million confirmed cases of COVID-19 and more than 5 million deaths due to COVID-19 have been reported to the WHO ([covid19.who.int](https://covid19.who.int)). Other well-known zoonoses are Ebola, MERS,

SARS, avian influenza, tuberculosis, toxoplasmosis, rabies, and malaria. Zoonoses are responsible for about one billion cases of illness in people and millions of deaths each year [6].

Zoonotic outbreaks are becoming more frequent and intense [6–8]. Recent zoonoses are mostly linked to human actions, such as animal production systems, modern transportation, land use, the extraction of natural resources, and climate change [5,9,10]. The majority of zoonoses emerged in wildlife [10]. However, most zoonoses of recent concern emerged through animal farming [11]. The production and consumption of animals and animal-based products influence zoonotic risks either directly through increased contact with farmed and wild animals or indirectly via their impact on the environment (e.g., climate change, biodiversity loss) [6,12]. The impact and the way in which animal farming poses a zoonotic risk depends on the type of farming. Bushmeat and backyard farming increase the risk of zoonoses due to the possible spread of diseases from wild animals. Modern intensive farming also contributes to the risk of zoonoses, despite the assumption that modern intensive farming methods have increased biosecurity and biocontainment [6,7,11–16].

### *1.1. Role of Intensive Animal Farming in Zoonotic Risks*

The starting point of our paper is that zoonotic risks exist in intensive animal farming. Multiple researchers have demonstrated the presence of a link between intensive animal farming and zoonotic risks [5–7,11,14,16–18]. Measures taken in intensive farming, such as biosecurity, movement restrictions, and the prompt isolation of infected farms, do reduce the transmissibility of diseases [13]. These measures, however, do not eradicate the risks [13]. This is also virtually impossible [16]. Diseases from outside farms can still enter—for instance, via personnel, veterinarians, and transportation teams. Additionally, diseases from within farms can spread to outside locations via animal waste, treated or untreated contaminated water, air, transportation, and the consumption of animals [15,16,19–21]. Evidence shows, for example, that avian influenza outbreaks occur frequently in large-scale farms, even though this zoonosis naturally occurs in wild birds [14,16]. It turns out that it is the movements of domesticated animals and their waste—not the migration routes of wild birds—that correspond most strongly to geographical patterns of avian influenza outbreaks [22–24]. While avian influenza is not spread yet by infected persons, these pathogens can easily evolve to enable transmission between humans [25].

Whereas biosecurity, movement restrictions, and prompt isolation reduce zoonotic risks in intensive farming, the conditions in which intensively farmed animals are kept and transported increase zoonotic risks. Zoonotic risks are amplified when the amount of animals increases and when the densities at which they are kept increase [6,11,26]. First, the chances of animals developing a disease—either originating within or outside farms—are higher in intensive farming than in backyard farming. This is due to the genetic proximity of intensively farmed animals, leading to them having weaker immune systems [27]. Furthermore, the high density and stressful conditions in which they are kept and transported also weaken their immune systems, which increases the risk and speed of diseases spreading [21,28–30]. Moreover, pathogens spread further and faster due to the high animal densities in intensive farming [16]. Evidence shows that the odds of avian influenza outbreaks are higher in large-scale farms than in backyard flocks [16].

Secondly, intensive farming plays a role in zoonotic risks, as pathogens spread further and faster due to the high animal densities in intensive farming [16]. Finally, the risk of these pathogens mutating into a zoonosis is also higher due to the high animal densities and high genetic proximities [6]. Evidence shows that conversions to highly pathogenic viruses—which lead to the emergence of zoonoses—mostly occur in high-density locations [14]. In addition to the direct role played by intensive farming in zoonotic risks, intensive farming plays an indirect role via deforestation [6,12]. Due to the expansion of the use of agricultural land for pasturages and for growing food for farmed animals, wild animals lose their habitats. This increases animal–human contact and, thus, zoonotic risks.

Note that the arguments regarding the role of intensive animal farming in zoonotic risks apply to all intensively farmed animals. Direct evidence mostly concerns animals in the meat industry—mainly pigs and poultry [14,16,18,22–24]. These animals are, however, the most consumed animals in the world (FAO Statistical Database, 2020). Additionally, even though the incidence of some zoonotic diseases has decreased in developed countries due to the use of control measures, including vaccination [31–33], researchers have showed that the increase of intensive animal farming has amplified the emergence of zoonoses [5–7,11,14,17,18].

### 1.2. The Current Study

Our first research question was to what extent people are aware that intensive farming poses a risk for zoonoses. Our hypothesis was that the majority of the participants would be unaware of this risk (risk perception hypothesis). This was expected, first of all, because people are not accurate when estimating risks in general. People tend to estimate various risks as low [34–36]. When evaluating risks, people make errors as their estimations are influenced by subjective perceptions, intuitive judgments, feelings, and inferences made from limited information and media coverage (e.g., [37–43]). Specifically for zoonoses, several studies have shown that people's limited knowledge leads to them having inaccurate risk perceptions (e.g., [44–46]). This also applies to livestock farmers [47]. As intensively farmed animals are locked in factory farms and not visible to people, it is likely that people are less aware of the number of animals held. What is visible to them is the amount of meat and dairy offered in supermarkets. However, as people cognitively dissociate the meat they consume from its animal origins (e.g., [48]), they may not link the amount of meat available to the risk of diseases from animals. Therefore, we also aimed to explore to what extent people could accurately estimate the percentage of meat coming from intensive animal farming.

The second aim of this research was to investigate whether people are willing to take protective measures to decrease the risk of zoonotic outbreaks. As controls, such as biosecurity, do not eradicate the risk of zoonoses [13,15], we focused on the solution of reducing the consumption of animal products [6]. As such, a protective measure that people can take to decrease the risk of zoonoses is to reduce their consumption of animal products (i.e., meat, dairy). We hypothesized that, once aware of the origin of zoonoses, the majority of the participants would be willing to reduce the risk of zoonoses by reducing their animal product consumption (protective measure hypothesis). This is expected because information about the origin of zoonoses will influence their perceived likelihood of the risk. This factor increases people's willingness to take self-protective actions when the proposed actions to be taken are perceived as effective, as suggested by risks theories and empirical evidence (e.g., [49–54]). Finally, we explored to what extent participants believe the government is (also) responsible for taking protective actions, such as banning the practice of intensive animal farming.

We investigated our research questions with a survey of a representative sample of people living in The Netherlands. This country has the highest livestock density in the world [54]. Additionally, only 3.2% of all Dutch meat is organic [55–59]. In Europe, two major zoonotic outbreaks have occurred in the past 20 years, both originating in The Netherlands (bird flu and Q fever).

All subjects gave their informed consent for their participation before they conducted the study. This study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Ethics Committee of the University of Twente in Enschede, The Netherlands (approval number 210889). We report all manipulations, measures, and exclusions (if any) in these studies. The materials and data of the reported studies are available via the Open Science Framework (<https://osf.io/2v6qp/>).

## 2. Materials and Methods

### 2.1. Participants

The sample size was estimated using the method proposed by Daniel [60] (see also <https://www.qualtrics.com/uk/experience-management/research/determine-sample-size/>, accessed on 1 May 2021). As we were interested in the population of all people living in The Netherlands who were 18 years and older,  $N$  was set at 14,268,917 (i.e., the number of Dutch people of 18 years and older in January 2020, <https://opendata.cbs.nl/>, accessed on 1 May 2021). The confidence level was 95% ( $z = 1.96$ ). The standard error was set at 10% point ( $e = 0.10$ ), as we were interested in the outcomes in terms of what the majority thought.  $p$  was set at 0.5, as it was difficult to determine the expected standard deviation a priori. After Bonferroni's correction based on the two hypotheses, the proposed ideal sample size was 385 participants.

In total, 1009 (495 female; 504 male, 10 other/missing) Dutch people participated in this study. Their ages ranged from 18 to 90 years ( $M = 50.0$ ,  $SD = 17.8$ ). Participants were recruited via an independent research and consultancy company, Newcom, to obtain a representative sample. The Newcom panel was ISO 26362-certified. This means that the panel fulfills strict requirements regarding the composition, size, and frequency of participation (see also <https://www.iso.org/obp/ui/#iso:std:43521:en>, accessed on 1 May 2021). The sample used in this study is representative of Dutch citizens in terms of their age, gender, and the province they live in (see Supplementary Materials). This is based on the composition of the Dutch population, as reported in the Dutch CBS database (<https://opendata.cbs.nl/statline/#/CBS/en/>, accessed on 1 May 2021). Participants received an invitation email with a link to an online survey. The survey was run from 26 May to 5 June 2021.

### 2.2. Procedure and Materials

The study took about ten minutes to complete. Participants read the informed consent and, after agreeing, started the questionnaire. Participants were told that we were interested in their opinions regarding corona-related issues. The term zoonosis was explained briefly.

To measure people's awareness of whether zoonoses can emerge through intensive farming, participants were asked to indicate whether they thought that the statement 'zoonoses can originate through intensive animal farming in my country' was true or false, or whether they did not know. Two filler items were added, asking whether participants thought that the statements 'zoonoses can solely originate in distant countries' and 'zoonoses can solely originate through direct contact with wild animals' were true or false, or whether they did not know. Then, participants were asked to what extent they regarded the way we treat animals as being a risk to zoonosis outbreaks (1 = not at all, 7 = very much).

Participants' intentions to change their consumption behavior to reduce the risk of zoonoses was measured. As we did not know whether people were aware of the causes of zoonoses, we asked them that if it were possible to reduce zoonoses by consuming fewer animal products, whether they would (1) consume more than they currently do, (2) consume just as much as they currently do, (3) consume fewer than they currently do, (4) not consume any at all, or (5) whether they already did not consume any. Control items included 'now that I know what it is like to live in quarantine, I would ... of animals that have to live in quarantine their entire lives'; 'if consuming fewer animal products would have a positive effect on my health, I would...'; 'if I could reduce animal suffering by consuming fewer animal products, I would...'; and 'if I could reduce human suffering (exploitation) by consuming fewer foods that produce human suffering, I would...' using the same answer possibilities (consume more, equal, fewer, not at all, do not consume).

Thereafter, the participants were instructed to carefully read a message which informed them about the origin of zoonoses. The message started with information that it is likely that the current zoonosis originated at a market in China where the disease transferred from a wild animal to a human. Then, it provided general information that zoonoses are more likely to occur when animals are held in large numbers close together, as this makes them more vulnerable to diseases. It was also mentioned that 75% of all bacteria and viruses that could make humans sick stem from animals, such as MERS, SARS, Ebola, bird flu, Q-fever, and COVID-19.

Participants' ideas on how to prevent zoonoses were measured using 5 statements, where they indicated to what extent they agreed on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). It was emphasized that the statements did not regard reducing the risk of becoming infected when a zoonosis outbreak had already occurred, but regarded the prevention of the emergence of zoonoses. The statements were that all countries should ban wild markets, all countries should ban intensive animal farming, my behavior can contribute to the prevention of zoonoses, and the government is responsible for the prevention of zoonoses. Responsibility to prevent future zoonoses was also measured using a 100-point scale slider from this being entirely the responsibility of the government (0) to this being entirely the responsibility of the participants themselves (100), with the midpoint indicating the responsibility as being equally shared (50).

To assess participants' perceptions of how risky their consumption behavior is, we asked them what percentage of meat they think comes from locations where animals are held in large numbers close together (intensive animal farming), thereby increasing the risk of diseases being transmitted from animals to humans. They could indicate their answer on a slider scale from 0 to 100%.

At the end of the questionnaire, participants were asked to indicate their gender, their age category, their birthyear, the province they live in, and their occupation and work branch. Additionally, the participants were asked to indicate on a categorical scale whether they were omnivores, pescatarians (vegetarians who eat fish), vegetarians, vegans, do not know, or do not want to share. Finally, participants were thanked for their participation and debriefed.

### 3. Results

#### 3.1. Risk Perception

*Intensive farming.* The results obtained for the accuracy of risk perception indicated that of all the participants ( $N = 1009$ ), 64.5% (95% CI (61.6 69.5)) believed that zoonoses can originate through animal farming in their country (i.e., The Netherlands), while 8.9% believed that zoonoses cannot originate through animal farming and 26.6% indicated that they did not know. The results of the filler questions indicated that the biggest group of participants also held accurate views regarding whether zoonoses can solely originate in distant countries (11.5% true, 68.9% false, 19.6% did not know) and whether zoonoses can solely originate through direct contact with wild animals (22.6% true, 48.9% false, 28.5% did not know).

*Treating animals.* To provide the percentages of participants who did and did not regard the way we treat animals as a risk and those who were neutral, the responses to the 7-point Likert scale of 1–3 were taken together as not regarding the way we treat animals to be a risk, 4 as remaining neutral, and 5–7 as regarding the way we treat animals to be a risk. This was carried out to make the interpretation of the results easier. The results for each answer can be found in Table 1. The results indicated that the majority of the participants did regard the way animals are treated as a risk for the outbreak of zoonoses (65.8%, 95% CI (62.9, 68.7)). A total of 11.8% did not consider the treatment of animals as a risk, while 34.2% were neutral.

**Table 1.** Percentages of responses per answer for the questions about the treatment of animals and zoonosis prevention.

	1 Not at All	2 Not	3 Not Therefore, Much	4 Neutral	5 A Bit	6 Much	7 Very Much
Treating animals	1.8%	2.2%	7.8%	22.4%	33.8%	24.3%	7.7%
Ban wild markets	1.8%	4.6%	5.1%	13.2%	24.4%	26.7%	24.4%
Ban intensive animal farming	4.5%	8.1%	9.4%	24.9%	26.5%	15.8%	10.9%
My behavior	3.9%	7.1%	9.0%	28.5%	29.1%	13.9%	8.4%
The government	1.8%	4.9%	5.3%	25.1%	30.0%	22.0%	11.0%

### 3.2. Intention to Change Behavior

Descriptions showed that the majority of participants would be willing to consume fewer or no animal products in order to reduce future zoonoses (63.6%, 95% CI (60.6, 66.6)), of which 50.0% would consume fewer animal products, 6.6% would stop consuming these products, and 7.0% reported that they already did not consume animal products and would stick to that. A total of 33.1% reported intending to consume just as many animal products.

Note that the majority of participants were also willing to consume fewer animal products if it would prevent animals from living their lives in quarantine (55.0%), if it would benefit their health (69.7%), and if it would reduce animal suffering (67.9%). Furthermore, participants were willing to consume fewer products that were related to human suffering in order to prevent exploitation (72.5%).

To analyze for which causes people were more likely to change their behavior, we conducted paired sample t-tests using a 4-point scale (more, equal, fewer, not at all) regarding willingness to change behavior. In these analyses, we excluded participants who indicated that they already did not consume animal products. T-tests showed that people were least willing to change their consumer behavior to prevent animals from living their entire lives in quarantine ( $M = 2.58$ ,  $SD = 0.68$ ) and most willing to change their consumer behavior to prevent human suffering ( $M = 2.83$ ,  $SD = 0.68$ ) compared with the other categories,  $t_s(886) > 2.26$ ,  $p_s < 0.025$ . Furthermore, participants were more willing to change their behavior to benefit their health ( $M = 2.75$ ,  $SD = 0.66$ ) and to prevent animal suffering ( $M = 2.74$ ,  $SD = 0.67$ ), than to reduce the risk of zoonoses ( $M = 2.63$ ,  $SD = 0.66$ ),  $t_s(886) > 5.47$ ,  $p_s < 0.001$ . The scores obtained for health and animal suffering did not significantly differ,  $t_s(886) = 0.91$ ,  $p = 0.36$ .

### 3.3. Prevention of Zoonosis

To provide the percentages of participants who disagreed, agreed, or were neutral, the responses to the 7-point Likert scale of 1–3 were taken together for disagree, of 4 for remaining neutral, and of 5–7 for agree. The results for each answer can be found in Table 1. The results indicated that the majority of participants (75.5%, 95% CI (72.9, 78.1)) were in favor of banning wild markets in all countries in order to prevent future zoonoses. A total of 11.4% were against the wild market ban and 13.2% were neutral. The results also revealed that the majority of participants were in favor of banning intensive farming in order to prevent future zoonoses (53.2%, 95% CI (50.0, 56.2)). In total, 22.0% were against banning intensive farming and 24.9% were neutral.

Furthermore, the results indicated that the majority of participants agreed that their behavior could contribute to preventing zoonoses (51.4%, 95% CI (48.3, 54.5)). A total of 20.0% disagreed, while 28.5% were neutral. Additionally, the majority of participants agreed that the government is responsible for preventing zoonoses (63.0%, 95% CI (60.0, 66.0)), whereas 11.9% disagreed and 25.1% were neutral.

When participants were asked to indicate the extent to which the government versus citizens should be responsible for preventing zoonoses from emerging, 42.1% (95% CI (39.1, 45.2)) indicated that the government should be more responsible than citizens (score below 50), 31.9% indicated they were equally responsible (score of 50), and 26.0% indicated that they think citizens should be responsible for preventing zoonoses (score above 50) (overall:  $M = 44.54$ ,  $SD = 22.14$ ).

### 3.4. Risky Consumption

Participants' perceptions of the percentage of meat that they think comes from risky locations ranged from 0–100% ( $M = 60.07$ ,  $SD = 23.31$ ,  $N = 981$ ). Note that 16 participants did not answer this specific question. These results indicate that the majority of participants were unaware of the amount of meat that comes from risky locations.

### 3.5. Relationship Risky Consumption with Risk Perception, Behavior Change, Prevention

Correlational analyses showed that the more participants estimated their meat to come from high density risky locations, the more they regarded the way animals are treated as a risk for zoonoses,  $r = 0.31$ ,  $n = 994$ ,  $p < 0.001$ . Additionally, the more participants estimated their meat to come from high density risky locations, the more participants were willing to consume fewer animal products,  $r = 0.21$ ,  $n = 994$ ,  $p < 0.001$ , and the more participants think governments should reduce intensive farming,  $r = 0.30$ ,  $n = 994$ ,  $p < 0.001$ .

### 3.6. Additional Exploratory Analyses

To explore whether gender and age affected our main results, we conducted additional analyses for our main dependent variables. The results are reported in the Supplementary Materials.

## 4. Discussion

The results showed that the majority of participants had accurate perceptions of the origin of zoonoses, including that zoonoses can originate through intensive animal farming and that the way we treat animals poses a risk for zoonotic outbreaks. The majority of participants were willing to consume fewer animal products and were in favor of the government banning intensive farming to prevent future zoonoses. Furthermore, the majority of participants regarded preventing future zoonosis outbreaks as both their own responsibility and the responsibility of the government, with more responsibility placed on the government. Finally, the majority of the participants were unaware of the amount of meat that comes from intensive farming. The more the participants regarded meat to come from intensive farming, the higher their risk perception was, the higher their intention to reduce their animal consumption was, and the stronger their opinion that governments should ban intensive farming was. Similar results were obtained in two studies with an unrepresentative sample (see <https://osf.io/ds6mh/>, accessed on 1 May 2021).

Contrary to the risk perception hypothesis, we found that the majority of participants were aware that intensive animal farming and the way animals are treated poses a risk for zoonoses. This seems to contrast with previous research [44–47], indicating that people have limited knowledge regarding zoonoses. Importantly, in our research participants were asked a few very basic questions during a time in which there was a lot of media attention on zoonoses. It can still be regarded as problematic, though, that more than one third of the participants did not know that intensive farming creates a zoonotic risk. Furthermore, the majority of participants did not know or had inaccurate beliefs that zoonoses do not solely originate through direct contact with wild animals.

The protective measure hypothesis—that the majority of the participants would want to reduce their animal product consumption if this would indeed help to reduce the risk of zoonoses—was confirmed. The results showed that the majority of participants were willing to change their consumption for other positive outcomes as well (e.g., reduce animal suffering, promote own health). One could speculate about whether participants responded

in a socially desirable way. The participants, however, did show variation in their responses. Additionally, at least one fourth of the participants indicated that they would not be willing to change their behaviors, suggesting that they did not feel pressure to respond in a socially desirable way.

An interesting finding when comparing the behavioral intention control questions was that people were more willing to consume fewer products associated with human suffering than with animal suffering. This is not a surprising finding, as people value nonhuman animals lower, which is termed speciesism. People treat nonhuman animals differently solely based on their species membership. Speciesism occurs even when intelligence and sentience are accounted for (e.g., [61]).

Our results contribute to the knowledge about people's perception of zoonoses by filling in the gap on (1) to what extent people are aware that intensive farming poses a risk for zoonoses and (2) whether people are willing to take protective measures to decrease the risk of zoonotic outbreaks. Our results are promising, showing that the majority of participants were aware of the risk of intensive farming for future zoonoses and were willing to change their food consumption to prevent this risk.

Based on these results, one would expect that animal product consumption should have decreased during the COVID-19 pandemic. In society, we have seen a reduction in the consumption of animal products; however, this is not as large as one would expect based on this current study. Worldwide, there has only been a 3% reduction in meat consumption, which is mostly due to financial aspects and restaurants being closed for a long time. In The Netherlands, there has been an increase of 6.1% in meat sold in supermarkets and butchers, but a small reduction is expected when taking the meat that is normally served in restaurants into account [62]. The impact of COVID-19 on participants' meat and fish consumption was investigated in a survey conducted among 713 Dutch participants. The results showed that 9% of all participants reported to have reduced their animal product consumption, of which most reduced their animal product consumption on one day in the week [63]. This percentage is not as large as the results of our current study would imply: 64.5% of the participants were aware that intensive animal farming is a risk to zoonotic outbreaks and 63.6% wanted to consume fewer animal products to reduce the risk of future zoonoses.

An explanation for this may be that most participants are aware that there is a possibility that zoonoses may originate through intensive animal farming, but they may not regard it as likely and therefore do not reduce their animal product consumption. The results support this idea, as most people have inaccurate views about the extent to which meat comes from locations posing a risk for zoonoses. This suggests that, in addition to raising awareness of the origin of zoonoses, it is also necessary to raise awareness of the likelihood of zoonotic outbreaks and where the animal products people consume come from. Additionally, another explanation for this is that people may not feel that their individual changes will have a sufficient impact. Our results do show that the majority of participants think that their behavior can contribute to a reduction in zoonotic outbreaks. Nevertheless, the majority were also of the opinion that governments are responsible for preventing future zoonoses. The majority agreed with countries banning wild markets and intensive farming. Finally, the lower price of products from intensively farmed animals may play a role as well.

The current study was conducted among people living in The Netherlands. This raises the question of to what extent these results are generalizable to other countries. The Netherlands has the highest density of farmed animals in the world [54]. Therefore, if anything, these participants should be most aware about the risk of zoonoses. However, as people do not visibly see intensively farmed animals and dissociate meat from animals [48], risk perception may not differ across countries. Future research could investigate whether differences exist depending on animal density and country.

## 5. Conclusions

In summary, our research showed that participants were aware that zoonoses can occur through intensive animal farming, but were not aware that most of their meat comes from locations with a high animal density that posing a threat to zoonoses. Participants were willing to change their animal consumption behavior if this would reduce the risk of future zoonotic outbreaks.

**Supplementary Materials:** The following are available online at <https://www.mdpi.com/article/10.3390/su14020589/s1>, Table S1: Distribution of gender in the population and in the sample; Table S2: Distribution of age categories in the population and in the sample; Table S3: Distribution of province in the population and in the sample.

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**Data Availability Statement:** The data presented in this study are openly available at <https://osf.io/2v6qp/>.

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