ASP3IRE Twitter Labeling Guide

Revision Date: Oct 25, 2022

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health (can select multiple)?

**Introduction**

Twitter is a social media outlet where many people express their perceptions, opinions, and events that impact their health. Here are some tweet examples relevant to environmental health.

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As part of the ASPIRE children’s health center, we’re developing deep learning models to extract information from Twitter about children’s health. Specifically, we want our deep learning models to capture the following characteristics of environment-health relationships:

1. **Age** - does a tweet mention someone under 18, and if so, what age development stage?
2. **Place** - does a tweet mention a place where children spend a lot of time (e.g. home, schools)?
3. **Child development** – does a tweet mention a child learning or developing a skill?
4. **Health** – does a tweet mention a health condition or change in physical, cognitive, and/or social/emotional health?

**FAQ**

**What is a Twitter record and what information in a record can be used for coding tweets?**

Each record contains the author username, the @ username (if applicable), tweet text including hashtags and a picture if media was pinned to the tweet (media can include pictures, videos, and .GIFs). **When labeling records, the labeler (also referred to as a coder in this guide) can consider all of these pieces of information but should prioritize the tweet text and, if present, the picture.** Information from external data sources, such as websites from tweet hyperlinks, should not be considered for labeling tweets.

**What types of images should be excluded when coding tweets?**

Images which are memes or metaphors, or from works of fiction (e.g. comic books, movies) should not be considered when coding a tweet. Drawings can be considered if they are based on entities that exist in real life. For example, a comic book drawing of a fictional baby does not count, while a mother posting a drawing representing a non-fictional behavior of her baby does count.

If the image is relevant to the author’s message but differs from the tweet text, then you should consider both the image and text. For example, if the tweet text mentions an indoor location but the image shows an outdoor location, then you can select indoor and outdoor locations for question 1 of the survey.

**What is a child?**

In this project we are defining a child as **anyone who is born and under the age of 18 at the time of tweet**. Children health needs and gaps can differ between age groups (e.g. baby vs teenager), which is why we are adding age group classifications. Further details about age group classifications are provided in the directions for question 4. Adults reminiscing about their time as children do not count. In this study we are not classifying a fetus as a child. Some edge cases that do count as children are tweets announcing a birth in progress or a tweet describing a child who recently died.

**What if a tweet contains controversial content?**

Twitter records may include controversial content including pornography and foul or abusive language. Coders may encounter objectionable content while labeling. If you do not feel comfortable labeling a record with controversial content, use the skip tweet button (above the tweet picture).

**Our goal is to label tweets based on the perspective of the tweet authors.** When labeling records it is important to objectively choose labels based on directions provided below, regardless of whether or not the author’s opinion is correct. For example, an author may incorrectly believe vaccines cause disease. Here we want to capture the author’s belief that a vaccine causes a negative health impact, even though this belief contradicts all available evidence.

**Survey Questions**

1. **Can you identify a location from the text, hashtags, and/or image? (can select multiple)?**

**Directions:** Look at the username, text, hashtags, and image. Can you tell if the hashtag, text and/or image refers to a location that’s indoors or outdoors? Sometimes it may not be possible to know for sure if the location is indoors or outdoors. **Images taken from within a car count as indoors. Unless the tweet suggests otherwise, you can assume a service location (e.g. hospital, café) is indoors.** Try to make an educated guess. If a picture is taken indoors but through a window focuses on an object outdoors, then the tweet may either be outdoors only or outdoors & indoors, depending on whether the indoor location is relevant to the tweet context.

**Options**

Indoor location: the hashtag, text and/or image describe or depict somewhere indoors. (1.1, 1.3)

Outdoor location: the hashtag, text and/or image describe or depict somewhere outdoors. (1.2, 1.3)

No location/unsure: the hashtag, text and/or image do not provide information about a location, or the location is unclear. (1.4)

**Question 1 Example Answers**

**1.1 Answer:** Indoor location

**1.1 Explanation:** The text describes a classroom, which is an indoor location. The image also shows an indoor classroom.

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**1.2 Answer:** Outdoor location

**1.2 Explanation:** the text mentions a playground, which is usually an outdoor location. The image is also outdoors.

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**1.3 Answer:** Indoor location and Outdoor location.

**1.3 Explanation:** the author mentions home and homeless shelter, which are indoor locations. The author also describes fighting wildfires and the image shows wildfire damage in the yard, which are outdoor locations.

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**1.4 Answer:** No location

**1.4 Explanation:** the author does not mention a location.

1. **What type of location does the tweet mention (can select multiple)?**

**Directions:** This question will only appear if you select Indoor location and/or Outdoor location for question 1. Look at the username, text, hashtags, and image. Select all locations from the list that are in the text, hashtags, and/or image. You can select multiple locations. Only select the neighborhood option if a location is mentioned in the neighborhood that resides outside of a home property, such as a street or grocery store.

**Options**

Childcare/daycare: the text and/or image depict a business location for supervising children. Can include home care (e.g. nanies) as well as formal businesses. (2.2)

A Home: the text and/or image depict a living space, including a home, condomimum, or apartment. (2.1,2.2)

Neighborhood: a location near the subject’s residence but outside of the home property. Examples include neighborhood grocers, sidewalks, and streets. (2.5)

Park/playground/child sports center: locations officially designated for play, often including playground equipment such as swings, slides, and basketball courts. Does not include locations temporarily conscripted for play such as neighborhood sidewalks and parking lots. (2.3)

School: the text and/or image depict school grounds, including both private and public schools. **School events outside of school grounds such as field trips do not count.** (2.4)

Other: any location that does not fit in one of the previous categories. (2.6)

Unsure: a location is mentioned, but there is insufficient information to make an educated guess.

**Question 2 Example Answers**

**2.1 Answer:** Home and Other

**2.1 Explanation:** the author mentions home and homeless shelter. The image depicts the home residence.

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**2.2 Answer**: Home and daycare

**2.2 Explanation**: The text mentions home and daycare. From the text we can infer that the image was taken at home.

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**2.3 Answer**: Park/playground/child sports center

**2.3 Explanation**: the text mentions a playground. The image contains play structures in the background, which suggests the children are playing in a park or playground rather than on a sidewalk.

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**2.4 Answer**: School

**2.4 Explanation**: The text mentions a classroom, which is usually within school grounds. The image also suggests children in a formal learning environment, most likely school.

**.5 Answer**: Neighborhood

**2.5 Explanation**: The text mentions neighborhood and neighbors. The image depicts a residential area.

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**2.6 Answer**: Other

**2.6 Explanation**: the text describes a veterinary center. From the text we can infer the image is also at a veterinary center.

1. **Does this tweet mention or depict a child or children (yes/no)?**

**Directions:** Look at the username, text, hashtags, and image. Does the text, hashtags, or image mention or depict a child or children? Descriptions or depictions of related nouns such as schools, pediatricians, and toys do not count. The text, hashtags, or image must either directly mention or depict a child or a group of children. **Images which include children as part of a meme, metaphor or fictional works such as movies do not count.** Image of prengnant women, ultrasounds, baby showers, and other examples of prebirth content do not count as a baby.

**Options**

No: the text and/or image do not directly mention or depict a child. (3.3,3.4)

Yes: the text and/or image directly mentions or depicts a child. (3.1,3.2)

**Question 3 Example Answers**

**3.1 Answer**: Yes

**3.1 Explanation**: While the text does not indicate children, the image contains children. With the text and image together we can infer the text refers to teaching the children in the picture.

**3.2 Answer**: Yes

**3.2 Explanation**: The tweet mentions children as a group (children’s communication). The children in the image are representations of children rather than as part of a meme or metaphor.



**3.3 Answer**: No

**3.3 Explanation**: while the tweet mentions a children’s hosptial, it does not mention children.

**3.4 Answer**: No

**3.4 Explanation**: the use of the word child is referring to the retrospective behavior of the author, who is presumably an adult.

1. **What age group does the child(ren) belong to (can select multiple)?**

**Directions:** This question will only appear if you answered yes in question 3. What is(are) the age group(s) of the child(ren) mentioned in the tweet? Use text, hashtags, and imagery to determine age groups. **Images which include children as memes or metaphors do not count. If a tweet contains pictures of the children, try to guess their age rather than selecting school age or no specific age.**

**Options**

0 to less than 1 years (baby/infant). (4.1)

1 to 4 years (toddler/pre-school). (4.2)

5 to 10 years (elementary school). (4.3,4.4)

11 to 13 years (middle school). (4.4)

14 to 17 years (high school). (4.4)

School age (no specific school type): use if the tweet mentions school children, but not a specific age and it is not possible to guess the age from available imagery. Example “School children have it much harder these days” (image of the adult author rather than of children).

No specific age (children general): Select if the tweet mentions children, but no specific age group and it is not possible to guess the age from available imagery. Example “I believe children are our future” (no image provided).

Unsure: There is insufficient information to make an educated guess about the age group. **Should be used rarely.**

**Question 4 Example Answers**

**4.1 Answer:** 0 to less than 1 years (baby/infant)

**4.1 Explanation**: From the text it is not possible to estimate the child’s age group. From the photo the labeler guessed that the child is 0 to 1 years old.

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**4.2 Answer**: 1 to 4 years (toddler/pre-school)

**4.2 Explanation**: The text in the photo mentions the age of the child as 2.5 years old. We can also infer the child in the photo is the same person.

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**4.3 Answer**: 5 to 10 years (elementary school)

**4.3 Explanation**: The children in the photograph look older than toddlers/pre-school and younger than middle school

**4.4 Answer**: 5 to 10 years (elementary school), 11 to 13 years (middle school) and 14 to 17 years (high school).

**4.4 Explanation**: The text does not mention a specific age group. Children in the photo appear to cover a range of age groups, from late elementary to early high school.

1. **Is a health symptom or outcome mentioned in the tweet (doesn’t have to be a child)?**

**Directions:** Look at the username, text, hashtags, and image. Do they mention either a health symptom such as difficulty breathing, anxiety, brain fog, or a health outcome such as asthma, depression, or memory loss? Remember, this can include emotional/social symptoms or outcomes which affect social skills and emotional health as well. **Only human health symptoms/outcomes count. Do not consider health outcomes for animals or non-corporeal entities (e.g. the planet)**

**Options**

No: a health symptom or outcome is not mentioned (5.3,5.4)

Yes: a health symptom or outcome is mentioned (5.1,5.2,5.5)

**Question 5 Example Answers**

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**5.1 Answer**: Yes

**5.2 Explanation**: The author expressed emotional harm (‘hurt’) in the text

**5.2 Answer**: Yes

**5.2 Explanation**: the text mentions underlying health conditions, death, and an infectious disease.

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**5.3 Answer**: No

**5.3 Explanation**: The author does not mention any health effects from bringing their child to work.

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**5.4 Answer**: No

**5.4 Explanation**: While the author is clearly in favor of children’s education, the author does not explicitly mention any symptoms or health outcomes.

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**5.5 Answer:** Yes (details are important)

**5.5 Explanation:** The majority of the text discusses the health of a dog, which is not pertinent to human health. However, the authors describe being ‘touched’ by generosity. The authors are implying a positive emotional health impact.

1. **Does the tweet author imply a positive or negative health impact (can select multiple)?**

**Directions:** This question only appears if you answered yes to question 5. In question 5 you mentioned that the author mentions a health symptom or outcome. Does the author infer that these symptoms or outcomes are positive or negative?

**Options**

Negative impact: a health symptom or outcome is negative (e.g. stress inducing, heart attack). (6.2,6.3)

Positive impact: a health symptom or outcome is positive (e.g. stress relief, diabetes treatment or prevention). (6.1,6.3)

No impact: a health symptom or outcome is neither positive or negative. **Should rarely be selected**

**Question 6 Example Answers**

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**6.1 Answer**: Positive health impact

**6.1 Explanation**: the tweet mentions the feelings of a child, as well as the ‘hearts’ (i.e. feelings) of the author. These are emotional health symptoms. The tweet suggests a positive emotional impact on the feelings of both the child and the authors.

**6.2 Answer**: Negative health impact

**6.2 Explanation**: the author mentions ‘hurt’, which is a symptom of emotional health. Hurt is most often associated with negative health impacts

**6.3 Answer**: Negative and Positive health impact

**6.3 Explanation**: The author describes breathing, asthma, a collaposed lung, and COVID which are physical health symptoms and outcomes. Not being able to breathe, collapsed lung, and COVID are described as negative changes in health. However, the author describes outgrowing childhood asthma, which is a positive change in health.

1. **Is (are) the health impact(s) referring to cognitive, emotional/social, or physical health (can select multiple)?**

**Directions:** for each health symptom or outcome mentioned in the tweet text and/or image, identify whether these are predominantly related to physical, intellectual, or emotional/social health. Emojis are often found in tweets. Face emojis (e.g. smiling face, face with tears) are almost always associated with an emotional health symptom or outcome.

**Options**

Cognitive health: health symptoms and outcomes which impact reasonsing or ability to process information. Examples include brain fog, learning disorders, and neurological impairment. (7.1)

Emotional/social health: health symptoms and outcomes which affect social skills and emotional health. Examples include speech impediments, social anxiety disorder, depression, and anger. (7.2,7.3,7.4)

Physical health: health symptoms and outcomes which are predominantly physiological. Examples are injury, infection, and obesity. (7.2,7.3)

**Question 7 Example Answers**

**7.1 Answer**: Cognitive health

**7.1 Explanation**: The author is self-reporting decreased memory retention, which is a symptom of a change in cognitive health.

**7.2 Answer**: Physical health and emotional/social health

**7.2 Explanation**: The text mentions underlying health conditions and COVID deaths, which are associated with physical health. The text also mentions long term isolation and inability to meet relatives, which are associated with emotional/social health.

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**7.3 Answer**: Physical and emotional/social health

**7.3 Explanation**: The author describes strength and a healthy body, which are indicators of physical health. The author also mentions the boy’s positive attitude and passion, which in this context is indictative of positive emotional health.

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**7.4 Answer:** Emotional/social health

**7.4 Explanation:** The author describes hurt, which is this context is emotional health. Note that although wildfires have significant potential to impact physical health, the author does not mention physical health symptoms or outcomes (e.g. coughing from smoke, burns) in the tweet.