

Sample design for the tiger survey

1. Sample size

$$n = \frac{Z^2 * P * (1 - P) * Deff * NaE}{e^2 * (1 - NR)} = \frac{1.96^2 * 0.057 * (1 - 0.057) * 1.50 * 8}{0.05^2 * 0.9} = 1,101$$

- n: sample size
- Z: level of confidence, Z = 1.96
- e: margin of error, e = 0.05
- P: estimated baseline level of the key behavior we want to measure. The survey used the result from the research conducted by Drury, which found that the percentage of people using consuming rare wildlife products (other than wildlife meat and bear bile) such as bone glue in Hanoi was 5.7%. p = 0.057
- Deff: design effect. The survey used the design effect of 1.50, which is recommended for complex sample design by WHO.
- NaE: the number of age group to survey, NaE = 8 (4 age groups combining with 2 genders result in the total of 8 age groups)
- NR: expected non-response. The survey used the expected non-response rate of 10%, which was based on the experience of the researcher conducting similar surveys in Vietnam.
- The result (**1,101**) was increased to **1,120** for practical purposes (to make the sample size divisible by the number of administrative units, which made it easier to implement the sampling strategy in the field)

2. Multi-stage sampling strategy

- Step 1 – Purposive sampling: Due to the time and resource constraints, the survey targeted adults (people who are 18 or older¹) in only urban districts of Hanoi and Ho Chi Minh City. In Hanoi, the sampling frame was composed of nine quarters with the population of 1,670,507 people, accounting for 82.9% of the whole urban adult population of the city. In Ho Chi Minh City, the sample included 19 districts with the population standing at 4,526,523 people, comprising 98.6% of the entire urban population in the city. In total, the study population of the survey amounted to 6,197,030, which was equal to 33.2% of the country's urban population at or over the age of 18.

- Step 2 – Cluster random sampling: Divide the study population into two clusters, including primary sampling units (districts) and secondary sampling units (wards). Select 4 wards in each district using probability proportional to size approach.

- Step 3 – Semi-random sampling in the field: Select 10 households in each ward using the random walk method: From the bottom left corner of the ward's map, survey every 5th household on the right.

Below is the summary of instructions provided to interviewers:

¹ 2015 Civil Code of Vietnam

- If you come to a side street on your RIGHT, continue down side street and continue counting and surveying every 5th household as though on main street. When you get to the end of the side street, turn around and walk back using same method (on the other side of the street, but now on your RIGHT). Do not turn onto a street that is parallel to the main street you are assigned to interview that day. If you complete the street and side streets assigned, contact research manager for instructions.
- If no one is home at 5th house, interview the neighboring house just before or after (n-1 or n+1 HH). If the person will return that evening, schedule to return that evening. If the person is not home when you return to interview the person that evening, interview a neighboring house (n-1 or n+1 household).
- Survey only ONE person per household. If you survey a man in the first household, survey a woman in the second household, etc. Alternate throughout the day. All respondents should be adults. They can be different ages from 18 to old age. If you interview an older woman at one house, interview a younger woman at next house. If other people are present, find a private place to talk with the one person being surveyed.

The most updated list of administrative units was provided by General Statistic Office of Vietnam on their official website (<http://www.gso.gov.vn/dmhc2015/>). Data about the population size, age and gender in Hanoi and Ho Chi Minh City were extracted from the latest Vietnam Population and Housing census which took place in 2009.

References

Drury, R. (2011). Hungry for Success: Urban Consumer Demand for Wild Animal Products in Vietnam. *Conservation and Society*, 9(3), 247-257. Retrieved January 16, 2020, from www.jstor.org/stable/26393047

World Health Organization. Noncommunicable Diseases and Mental Health Cluster. (2005). WHO STEPS surveillance manual: the WHO STEPwise approach to chronic disease risk factor surveillance / Noncommunicable Diseases and Mental Health, World Health Organization. World Health Organization. <https://apps.who.int/iris/handle/10665/43376>