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## **”Baboons on the road again” : Survey of vehicle occupants on a road crossing a national park in Uganda**

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1 *English title*

2 "Baboons on the road again": Survey of vehicle occupants on a road crossing a  
3 national park in Uganda

4

5 *Titre en Français*

6 "Baboons on the road again" : Enquête auprès des automobilistes sur une route  
7 traversant un parc national en Ouganda"

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48 **Abstract**

49 Infrastructures such as roads or railways fragment the forests, but they are also places of  
50 encounter between humans and wildlife. Some populations of primates, especially macaques  
51 and baboons, are regularly seen on roadsides. As these primates are also involved in direct  
52 conflict with humans for access to space and food, it is of particular importance to understand  
53 the attitudes of vehicle occupants towards these primates. In this exploratory study, we  
54 interviewed 383 vehicle occupants travelling on an asphalt road crossing Kibale National Park,  
55 Uganda, to assess how people perceive Olive baboons (*Papio anubis*) that are regularly  
56 present on the road, and the road regulations aiming to protect them (and other animal  
57 species). In addition, we daily monitored the road sides to record leftovers of anthropogenic  
58 food and to census the vehicles passing by. Most of the respondents did not express any  
59 negative attitudes toward baboons, although these primates regularly visit fields and gardens  
60 to forage on crops in the area. Few people were concerned about the 'do not litter' regulation.  
61 Although road users rarely feed them, baboons seem to remain attracted to the road because  
62 littering is very common. We recommend more sensitization of road users about the increased  
63 risks of accidents when baboons are attracted to the road because of anthropogenic food.

64

65 **Keywords:** Coexistence; Perceptions; Attitudes; Provisioning; Littering

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## 72 **Résumé**

73 Les infrastructures telles que les routes ou les voies ferrées fragmentent les forêts, mais ce  
74 sont aussi des lieux de rencontre entre les humains et les animaux qui peuplent ces forêts.  
75 Certaines populations de primates, en particulier les macaques et les babouins, sont  
76 régulièrement observées sur les routes. Comme ces primates sont également impliqués dans  
77 des conflits avec les humains pour l'accès à l'espace et à la nourriture, il est particulièrement  
78 important de comprendre l'attitude des automobilistes et autres usagers de la route à l'égard  
79 de ces primates. ~~Dans~~ Pour cette étude exploratoire, nous avons interrogé 383 conducteurs  
80 ou passagers de véhicules circulant sur une route asphaltée traversant le parc national de  
81 Kibale, en Ouganda, afin d'évaluer leur perception des babouins olive (*Papio anubis*) qui sont  
82 régulièrement présents sur la route et des réglementations routières visant à les protéger  
83 (ainsi que d'autres espèces animales). Nous avons également inspecté quotidiennement les  
84 bas-côtés de la route afin de répertorier les restes de nourriture d'origine anthropique et nous  
85 avons recensé les véhicules qui passaient sur la route. La plupart des personnes interrogées  
86 n'ont pas exprimé d'attitude négative à l'égard des babouins, bien que ces primates visitent  
87 régulièrement les champs et les jardins pour se nourrir des récoltes dans cette région. Peu de  
88 personnes se sont montrées préoccupées par la réglementation "ne pas jeter vos détritius".  
89 Même si les usagers de la route les nourrissent rarement, il semble que les babouins restent  
90 attirés par la route car les déchets alimentaires y sont très fréquents. Nous recommandons de  
91 sensibiliser les usagers de la route aux risques accrus d'accidents quand les babouins sont  
92 attirés sur la route par la présence de nourriture d'origine anthropique.

93

94 **Mots-clés** : Coexistence ; Perceptions ; Attitudes ; Approvisionnement ; Déchets.

95

## 96 **1. Introduction**

97 Pressures on ecosystems are intensifying at an alarming rate and with increasingly diverse  
98 human activities such as deforestation, urbanization, agriculture or infrastructure  
99 construction, leaving less and less space for wildlife (Newbold *et al.*, 2015; Venter *et al.*, 2016).

100 All these modifications and anthropogenic activities have accidental or deliberate  
101 consequences on biodiversity and ecosystems, affecting all ecological scales: species  
102 abundance, distribution, richness and interactions (Doherty *et al.*, 2021). Encounters between  
103 humans and wild animals are increasing which is leading to more regular interactions, which  
104 in turn affects animal behaviour and ecology (Gaynor *et al.*, 2024).

105 Development of infrastructures, such as roads or railways, results in fragmentation of  
106 landscapes (Benítez-López *et al.*, 2010). Overall, roads have a predominantly negative effect  
107 on animal populations, creating barriers to gene flow, increasing wildlife mortality due to  
108 collisions, and leading to a biodiversity loss (Fahrig & Rytwinski, 2009; Singh *et al.*, 2011). In  
109 such context, many species avoid road areas, which results in a reduced home range and  
110 possibly dispersal capacity (Benítez-López *et al.*, 2010, Ascensão *et al.*, 2022). There is a  
111 paucity of data on non-human primate deaths due to vehicle collisions, which has been  
112 attributed not only to the rarity of such incidents, but also to a geographical bias in the  
113 reporting of these deaths (Martin *et al.*, 2012). Primate foraging strategies can be modified in  
114 environments crossed by roads, which can result in changes in the distribution of daily  
115 activities and consequently in population dynamics and social structure, as revealed in Moor  
116 macaques (Morrow *et al.*, 2019). Some populations of macaques (Pragatheesh, 2011; Riley *et*  
117 *al.*, 2021) and baboons (Maille *et al.*, 2017; Kitegile *et al.*, 2022) forage on the road sides and  
118 beg for food from vehicle occupants. Indeed, roads are both places where humans litter food

119 and places of encounter between humans and wildlife where people can directly provide food  
120 to wildlife (Ilham, 2024).

121 In a variety of contexts, conflicts over access to food and space occur between humans and  
122 primates. Primates can forage on crops, sometimes strongly impacting the income of farmers  
123 through crop loss and damage (Hill, 2017). Crop-eating primates are then considered pests or  
124 vermin (Costa & Casanova, 2020) because people must devote time and energy to protect  
125 their fields (Hill, 2000; Findlay & Hill, 2020). These conflicts can physically hurt humans, who  
126 may suffer from bites or injuries when defending their crops against primates, sometimes  
127 resulting in death (Hockings *et al.*, 2010). Conflicts of this kind are also observed in urban  
128 areas, where some primates assault tourists at sites, but may also enter buildings, homes, and  
129 invade gardens (McCarthy *et al.*, 2009; Mormile & Hill, 2017; Mazué *et al.*, 2023).

130 Conservation policies settled to protect primates can impose indirect costs to humans when  
131 they reduce the ability of local people to protect themselves from wildlife invasions (Hill,  
132 2000). These policies may also outlaw ancestral practices of local populations, such as hunting  
133 for meat consumption, medicine or rituals (Kansky *et al.*, 2016). In many cases, local  
134 populations are not aware of the reasons for conservation policies or they disagree with them,  
135 or they go against these policies because they are in conflict with the authorities in charge of  
136 conservation in the area (Madden, 2004; Redpath *et al.*, 2013). In sum, the quality and  
137 quantity of interactions between nonhuman primates and humans, but also between humans  
138 themselves, will influence people perception of primates and how they will act towards  
139 primates (Narat *et al.*, 2017).

140 This study focused on how people travelling on a high-traffic asphalt road crossing a protected  
141 area, Kibale National Park, perceive Olive baboons (*Papio anubis*) that are regularly present  
142 on the road (Maille *et al.*, 2017). Olive baboons are one of the widely spread species of

143 baboons around the equator in Africa. They inhabit both savannah and rainforests with a  
144 highly adaptive and flexible behaviour, which makes them able to live in areas where there is  
145 intense human activity (Hill & Winder, 2019). Amongst primates in Africa, baboons are cited  
146 as a major source of human wildlife conflicts (Hill, 2017; Kyokuhaire *et al.*, 2023).

147 Our study area, the asphalted road that crosses the forest of Kibale National Park from the  
148 east to the west for approximately four kilometers, is two lanes wide and represents a high  
149 risk for wildlife in terms of collision. More than 150 vehicles per hour pass along this road and,  
150 even though the legal speed limit inside the park is 40km/h, most drivers overspeed (80km/h  
151 – 120km/h; Krief *et al.*, 2020). Besides, this road section has a number of curves and slopes of  
152 different intensities (ranging from 3.2% to 11.3%), which, combined with excessive speed,  
153 increases the risk of accidents when animals cross the road (Cibot *et al.*, 2015). A record of 48  
154 animals killed due to collisions, among which five baboons, have been reported during weekly  
155 patrols carried out on this road section from 2012 to 2014 (Cibot *et al.*, 2015) and 2017 to  
156 2019 (Krief *et al.*, 2020). In addition, two plastic collection surveys, conducted at four months  
157 interval, revealed an important littering rate (2406 plastic soda and water bottles were  
158 collected in the second survey, which represents a littering rate of 18 bottles a day; Krief *et al.*  
159 2020).

160 As this road section is part of the Kampala - Fort Portal high way, the main transport road that  
161 connects Uganda and the Democratic Republic of Congo, it was renovated and enlarged  
162 between 2017 and 2019, being widened from 13m to 20 m inclusive of the shoulder with grass  
163 (Cibot *et al.*, 2015; Krief *et al.*, 2020). In 2020, a number of equipment was put on the road by  
164 the Uganda National Roads Authority, in collaboration with Sebitoli Chimpanzee Project and  
165 Uganda Wildlife Authority, in order to mitigate the impact of the renovation work and reduce  
166 the risks posed by the road on both drivers and wildlife (Krief *et al.*, 2020). Some road bumps

167 were put to help control speed of the vehicles when going through the park. In addition, road  
168 signs displaying rules that people should observe while going through the park were put on  
169 the road sides by Sebitoli Chimpanzee Project. To make it more understandable for everyone,  
170 including those who cannot read, descriptive pictures were added to the signposts.

171 The main objective of this exploratory study was to assess the perception of road users about  
172 animal species that can be encountered on the road crossing the national park, especially  
173 baboons, and road regulations aiming to protect them. In addition, to better account for  
174 human impacts on the road, we daily monitored the road sides in order to record leftovers of  
175 anthropogenic food and animals killed by collisions with vehicles, and we regularly censused  
176 the vehicles passing. We also recorded baboon presence and their location alongside the road  
177 to have a broader overview of the context of the encounters between people and baboons on  
178 the road.

179

## 180 **2. Material and methods**

181

### 182 **2.1. Study site**

183 Kibale National Park (0°13'-0°41'N and 30°19'-30°32'E) is located in Western Uganda and  
184 covers approximately 795km<sup>2</sup>. The altitude varies between 1590m in the north to 1110m in  
185 the south. Kibale National Park hosts a medium-altitude tropical forest where the climate is  
186 composed of dry and rainy seasons with a bimodal distribution across years (Chapman &  
187 Lambert, 2000). The Park is a biodiversity hot spot where endangered species are present,  
188 such as the two species of elephants (*Loxodonta africana* and *L. cyclotis*) and their hybrids  
189 (Bonnald *et al.*, 2021), chimpanzees (*Pan troglodytes*) and African golden cats (*Caracal*  
190 *aurata*), and a high diversity of primates, including Olive baboons (*Papio anubis*).

191 This study focused on the asphalted highway road section of 4.6 km that crosses the Northern  
192 part of Kibale National Park, called Sebitoli area (Sebitoli is a village neighboring the north-  
193 west border of the park). Numerous studies have been conducted in this area in the context  
194 of the Sebitoli chimpanzee project (Director: Sabrina Krief, MNHN, and Jean-Michel Krief,  
195 PCGS) in the framework of a Memorandum of Understanding with Uganda wildlife Authority  
196 and Makerere University (SJ 445-12).

197

198

*Figure 1 around here*

199

200 On this road, bumps and signposts aim to help the cohabitation between wildlife and road  
201 users (**Figure 1**). These signposts are well visible and were cleaned before the study began.  
202 They remind vehicle occupants that animals are likely to cross the road and that they should  
203 not feed the animals, litter, or overspeed. The 4.6km road portion presents four points with  
204 bumps and eleven with signposts that are located on each side of the road, for a total of 22  
205 signposts that include “Do not litter” (8 signposts), “Do not feed wildlife” (6), “Do not  
206 overspeed” (2) and “Animals crossing” (6, among which 2 signposts have elephant drawings,  
207 2 have chimpanzees and there are 2 signposts with a mosaic of antelopes, chimpanzees and  
208 elephants at the borders of the national park). Location of the bumps and signposts is mapped  
209 in **Figure 2**.

210

211

*Figure 2 around here*

212

213 **2.2. Data collection**

214 The survey was carried out between January and May 2023 by a team of three research  
215 assistants (January – March = period 1: F. Benoit, J. Nabuule, P. Isingoma; April – May = period  
216 2: J. Nabuule, P. Isingoma). A total of 109 days was spent on the road, organized as follows: 6  
217 days a week (Thursday being off), 6 hours a day, alternating morning (7:00 AM - 1:00 PM) and  
218 afternoon observations (1:00 PM - 7:00 PM). The first 3 weeks of observations (from  
219 20/01/2023 to 12/02/2023) were dedicated to train the research assistants in data recording,  
220 and to identify baboon groups that used the road not only to cross but also to stay on the road  
221 for long periods (at least 15 min).

222

### 223 2.2.1. General situation on the road

224 Each day, the research team walked along the road from the research station to the eastern  
225 border of the park in order to locate baboons. At the same time, food leftovers (*i.e.*, the food  
226 scraps discarded by humans on the road) were recorded to monitor the diversity and the  
227 amount of food available for the baboons. In addition, throughout the study, dead animals  
228 found on the road tarmac or road sides were also recorded.

229 Traffic census was carried out 7 times per day on average (minimum = 2; maximum = 16) with  
230 a balanced distribution on each side of the road. Traffic census was carried out using the  
231 Cybertracker application for Android (version 3.528). Each traffic census lasted 5 minutes and  
232 was repeated with a minimum interval of 15 minutes. If baboons were present, traffic  
233 censuses were done simultaneously with the observations of baboons. When baboons were  
234 not on the road, traffic censuses were performed as a control. These traffic censuses enabled  
235 us to count the number of pedestrians and vehicles passing by in one direction (east to west  
236 or west to east).

237 Within the research team, one person conducted traffic census, another interviewed road  
238 users and, when baboons were observed on the road, a third person recorded the location  
239 and identified group composition and age-sex classes using direct observation with binoculars  
240 (Nikon Prostaff 3S, 10x42). As such, when the baboons were present on the road, the location  
241 of the traffic census and interviews depended on their position. We used key identification to  
242 find particularities for each baboon in order to give them an identity. Each individual baboon  
243 was allocated to an age-sex class among six age-sex classes that were determined from criteria  
244 of Wallace & Hill (2016): adults (fully grown individuals), subadults (sex is identified but not  
245 fully grown), juveniles (unidentified sex, begins to be independent but still small) and infants  
246 (small and dependant, maintaining high proximity with their mother).

247 To locate the food leftovers, dead animals and baboon groups that were observed along the  
248 road, we recorded GPS points using Garmin GPSmap 64s. Locations were then mapped using  
249 QGIS (version 3.16.11).

250

### 251 2.2.2. Interviews with road users

252 The research team stopped vehicles on the road and asked drivers and passengers to answer  
253 questions. We stopped people coming from the western and eastern sides of the road, with  
254 the aim of achieving a balanced number from each side each day.

255 We chose the location of the interviews depending on the location of the baboons. We also  
256 considered the safety of road users, avoiding curvy road portions and spots where the road  
257 sides were narrow. The location of the interviews was selected with the team and it was in a  
258 way that the people were interviewed after they had gone past the baboons. Surveys were  
259 conducted at a distance of 150 metres from the baboons. To maximise the chances of  
260 respondents having seen the baboons, surveys were conducted 150 metres east of the

261 baboons for vehicles travelling west-east, and 150 metres west of the baboons for vehicles  
262 travelling east-west.

263 We used a questionnaire that was written in English; however, it was conducted in two other  
264 languages, Luganda (J. Nabuule) and Rutoro (P. Isingoma), for the respondents who were not  
265 comfortable using English. Target respondents were at least 15 years old.

266 A complete version of the questionnaire has been attached in **Table 1**. The questionnaire was  
267 a mix of both open and closed questions and was designed to collect information about:

268 - *Profile of respondents*: age group, country of origin, region of origin for Ugandans (West,  
269 East, Central, and North), the reason for using the road, the frequency at which people see  
270 domestic and wild animals (mentioning the animals they see);

271 - *Perceptions of baboons*: identification of the animals they have seen on the road, whether  
272 they have fed the baboons (if so, identifying the food they had given to the baboons,  
273 expectation to feeding baboons, reason for feeding the baboons), knowledge on baboon  
274 diet, 3 words referring to baboons;

275 - *Perception of road regulations*: ability to identify and interpret signposts with animal  
276 information, knowledge about the speed limit in a national park, park rules they are willing  
277 to observe on their next trip (respondents were presented with stickers of signposts and  
278 they were asked to rank the road rules depicting on them in an order they thought would  
279 be important to them; they were then allowed to choose and keep one sticker).

280 In addition, after completing the interview, we recorded information about the vehicle (type,  
281 direction of travelling, presence of children), the respondent (sex and whether driver or  
282 passenger) and the other persons in the vehicle.

283 Completion of the questionnaire lasted a minimum of 4 minutes and a maximum of 7 minutes.

284 The questionnaire was deployed on KoboToolbox application

285 (<https://www.kobotoolbox.org/>) for Android, and ran on a smartphone. Data were saved and  
286 extracted from KoboTool box website.

287 We assessed differences in number of respondents using Binomial tests, Chi-square tests of  
288 independence and chi-square tests for Goodness-of-fit, with a significance threshold set at  
289 0.05, using R (version 4.3.3). The statistical analyses are not predictive because, as part of an  
290 exploratory study, we had no preconceived ideas about the perceptions of the people  
291 interviewed. Furthermore, no hypothesis could be inspired by previous studies since, to our  
292 knowledge, no other study has addressed road users' perceptions of biodiversity.

293

294 *Table 1 around here*

295

### 296 **2.3. Ethics**

297 The framework of the study was explained to each participant before starting the interview  
298 (**Table 1**). Only individuals that gave oral consent to answer the questions were interviewed.

299 In order to guarantee anonymity, no personal information was collected, except age and  
300 geographic origin. People under 15 were not interviewed, and we stopped the interview for  
301 those who were under 18 if they were not accompanied by at least one of their parents.

302 Research in Kibale National Park was approved by Uganda Wildlife Authority on 3<sup>rd</sup> of January  
303 2023 (reference number: COD/96/05).

304

## 305 **3. Results**

306

### 307 **3.1. General situation on the road**

308 At the time of the study, we counted a total of 4493 motorized vehicles out of which the most  
309 frequent were cars (36%), motorbikes (29%), big trucks (12%), minibuses (10%), small trucks  
310 (10%) and large buses (3%). We also recorded 36 pedestrians and 31 bicycles. Regular traffic  
311 censuses showed an intense traffic of  $2.7 \pm 1.2$  vehicles per minute (162 vehicles per hour on  
312 average), which remained constant throughout the day and the study period.

313 A map depicting the location of food leftovers and dead animals recorded alongside the road  
314 can be found in **Figure 2**. The total number of anthropogenic food items recorded during the  
315 data collection was 1093 with an average of  $11.5 \pm 4.7$  food leftovers per half-day, and were  
316 made up of 55% raw fruits, vegetables and seeds; 37% beverages (bottles of juice or alcohol);  
317 3% sweets (candy and honey); 2% cooked foods; 2% meat. We found 30 dead animals along  
318 the road: twelve reptiles (including eleven snakes and one chameleon), ten birds, five  
319 mammals (including three rodents, one genet and one baboon) and three amphibians.

320 Two social groups of olive baboons were regularly observed in different parts of the road. One  
321 group, called “the roadies”, was quite widespread on the road (**Figure 2**). This group has varied  
322 from 27 to 31 individuals, with two individuals (one juvenile and one infant) observed during  
323 the habituation period but died before the onset of data collection. At the end of the data  
324 collection, we observed 29 individuals in total: eleven adult females, five adult males, three  
325 sub-adult females, five juveniles and five infants. In the course of the study, two males joined  
326 the group successively, two infants were born, and six immatures (five infants and one  
327 juvenile) died including two of them because of a collision with a car. The second group, called  
328 “the campers”, was composed of 20 individuals, which split in two sub-groups, one going to  
329 the road next to the research station, and the other staying in the forest near the station. The  
330 sub-group found on the road was always composed of the five same individuals: three adult  
331 females, one adult male and one juvenile. Because “the campers” were not so numerous on

332 the road, we focused on the larger group “the roadies” during the study period. The “roadies”  
333 group was observed on the road 56 days out of 95 days of observations, so six days out of ten.  
334 When they were on the road, they remained on the road tarmac or sides for an average of  
335  $89.5 \pm 69$  minutes (mean  $\pm$  SE). During the study, two accidents with motorbikes were  
336 witnessed, one involving an adult male from “the campers” group and the other one an adult  
337 male from “the roadies” group, but none was injured.

338

### 339 **3.2. Interviews with road users**

340 A total of 383 interviews was achieved. The maximum number of surveys attained in a day  
341 was twelve and the minimum was one (with a median of 3.5 and a mean of 4.3). A total  
342 number of 195 respondents (51 %) were traveling from the eastern side of the road and 188  
343 respondents (49%) were travelling from the western side of the road. Because of the spatial  
344 distribution of baboons during the study, the surveys were carried out mostly at the eastern  
345 border of the national park.

346 Most of the people surveyed were riding a motorbike (181), followed by drivers/passengers  
347 of cars (74), big trucks (44), small trucks (52), pedestrians (31) and large buses (1). Considering  
348 that the number of vehicle types recorded in the traffic census was not balanced (**Figure 3**),  
349 we tested whether the proportion of respondents travelling in each vehicle type differed from  
350 the actual proportion of vehicles observed passing by the road. We found an over-  
351 representation of people riding motorbikes or pedestrians while there was an under-  
352 representation of users of cars, bicycles, mini and large buses in our survey as compared to  
353 the actual number of vehicles driving along the road (Chi-square test of goodness-of-fit:  $\chi^2 =$   
354  $35.1$ ,  $p < 0.001$ ; **Figure 3**).

355

356

**Figure 3 around here**

357 Out of the 383 people interviewed, 111 surveys (29%) were carried out in the presence of  
358 baboons (in this case, baboons were on the road at a maximum distance of 150 meters from  
359 the place where the surveys were done) and 272 surveys (71%) were carried out when the  
360 baboons were not seen on the road.

361

362 3.2.1. Profile of respondents

363 Out of the 383 respondents, a majority were men (371 men and 12 women). The respondents  
364 included both drivers and passengers, but a majority of respondents were drivers (277), and  
365 sometimes both passengers and drivers answered together (67) while passengers only  
366 occurred even more rarely (39). The age range of the respondents was between 15 to +66;  
367 the highest number of participants were in the age range of 26-35 years (155) followed by 15-  
368 25 (96), 36-45 (95), 46-55 (23), 56-65 (12) + 66 (2); as such our sample of respondents was not  
369 balanced in age (chi-square test of goodness-of-fit:  $\chi^2 = 289.75$ ,  $p < 0.001$ ; **Table 2**).

370

371

**Table 2 around here**

372

373 The respondents came from different African countries that included mostly Uganda (376),  
374 followed by Kenya (5), Nigeria (1) and Democratic Republic of Congo (1). Although some  
375 vehicles transporting non-African tourists (mostly European and North-American) were  
376 regularly seen passing by, few stopped for interviews and when they did, only the Ugandan  
377 driver was responding. Among the majority of respondents that were coming from Uganda,  
378 most of them were from the Western region (291), followed by Central region (45), East (27),  
379 and North (13). The proportions of respondents in each age group followed the same trend

380 regardless of which region of Uganda the participants came from (chi-square test of  
381 independence:  $\chi^2 = 9.15$ ,  $p = 0.690$ ; respondents who declared being older than 66-year-old  
382 were excluded from the analysis because they were too few; **Table 2**).

383 Most of the respondents used the road for work (289 = 75%), followed by category “other”  
384 (53) which possibly included school visits, burials, shopping, study trips and nature walks. The  
385 remaining respondents were on family visits (29) and tourism (12). As such, the reason for  
386 traveling on the road was not balanced in our sample of respondents (chi-square test of  
387 goodness-of-fit:  $\chi^2 = 528.91$ ,  $p < 0.001$ ).

388 Most of the respondents (350 = 91 %) stated that they often see both wild and domestic  
389 animals. Few respondents informed us that they only get to see wild animals (19) or domestic  
390 animals (7) and some declared seeing neither wild nor domestic animals in their daily lives (7).

391 The respondents were asked to name the animals that they often see in their daily life, which  
392 includes along the road and other places they dwell in: baboons were cited by almost half of  
393 the respondents (49%). Baboons were the more cited wild animal (188 citations), followed by  
394 elephants (182), monkeys (97; generic term used in Uganda to refer to primates that have a  
395 tail), chimpanzees (28) and other animal species (number of citations of each animal taxon is  
396 shown in **Figure 4**). The most often cited domestic animals were cows (285), goats (114) and  
397 dogs (53).

398

399 ***Figure 4 around here***

400

#### 401 3.2.2. Perception of baboons

402 For interviews carried out in the presence of baboons, almost all the respondents (104 out of  
403 111) reported they have seen the baboons in the past minutes, which confirms that baboons

404 are usually witnessed by road users. By contrast, only 14% of the respondents (39 out of 272)  
405 reported to have seen the baboons when interviews were carried out when the research team  
406 did not locate baboons at a close distance. Some respondents declared that, before being  
407 stopped by the research team, they have seen other animal species including chimpanzee (4),  
408 monkey (5) and elephant (3).

409 Only 2 respondents reported to have provisioned the baboons with food, and both of them  
410 fed baboons on bananas. When the 383 respondents were asked to name food items as part  
411 of the baboon diet, 69 % (264) of them reported anthropogenic food, which included bananas  
412 (111), maize (31), sweet potatoes (10), bread (3), cassava (6), chicken (2) and mangoes (2).  
413 Noteworthy, 31 % (119) of the respondents mentioned natural food items such as grass (52),  
414 tree leaves (33), forest fruits (12), small insects (8), flowers (1) and figs (1), showing accurate  
415 knowledge of forest baboon diet.

416 The respondents were asked to mention three words that came to their mind about baboons.  
417 Most of the respondents agreed to mention at least one word (331 out of 383), but only a few  
418 of them mentioned a second word (122) and even less a third word (22). We classified the  
419 words in six categories: “baboons as source of happiness”, “baboons eliciting compassion  
420 because of apparent hunger”, “baboons having similarities with humans in body anatomy and  
421 behaviour”, “baboons eliciting a feeling of insecurity”, “baboons being disgusting” (baboons  
422 being nasty or having ugly body features) and “baboons as a tourism attraction” (baboons  
423 being a source of income for Uganda). The number of times each category of words was  
424 mentioned as first, second and third thoughts is presented in **Table 3**.

425

426

***Table 3 around here***

427

428 Of the respondents who agreed to quote at least one word, 60 % (200 out of 331) mentioned  
429 words that referred to baboons as a source of happiness as their first thought, and some even  
430 showed compassion for the baboons (12). The first word of the other respondents referred to  
431 baboons as having physical or behavioural similarities with humans for 11% of the  
432 respondents (37), or baboons as eliciting a feeling of insecurity for 8% of the respondents (27)  
433 or being disgusting for 2% of the respondents (7). Words related to “tourism” were mentioned  
434 by 12 % respondents (42) as their first thought. The last 7% of respondents (6) cited words  
435 that we did not manage to classify into the six categories.

436 This distribution between the six categories of words differed for respondents that accepted  
437 to cite a second word (chi-square test of goodness-of-fit:  $\chi^2 = 107.03$ ,  $p < 0.001$ ) with a  
438 decrease in words that referred to baboons as a source of happiness and an increase in words  
439 related to tourism, while the proportion of other categories of words remained stable. The  
440 number of respondents citing a third word was too low for running proper analyses.

441 Of the words that we did not manage to classify, some were related to religion (*i.e.*, “baboons  
442 are goodness of God”, “cultural importance”) and others were associated with ecological  
443 concepts (*i.e.*, “baboons are part of the food web”, “adaptation”, “unity”, “way of life”).  
444 Interestingly, some people seemed to consider baboons as a pride (*i.e.*, . “patriotism”, “beauty  
445 of my country”) whereas others despised them (*i.e.*, “they are dustbin feeders”, “they do not  
446 like people”, “they misuse human space”). Five respondents talked about research, probably  
447 because of the context in which the interview was performed.

448

### 449 3.2.2. Perception of road regulations

450 Out of all the people that were interviewed, 98% (377 out of 383) confirmed that they were  
451 able to see some signposts along the road. However, depending on the location where the

452 interview occurred, the number of signposts they were able to see during their present travel  
453 strongly differed. Indeed, only respondents who were coming from the west and who were  
454 interviewed at the eastern border of the park (when they were exiting Kibale national park)  
455 were able to see all the signposts in the few minutes before the interview. The other  
456 respondents had not yet seen any signposts because they were either just entering the park  
457 (they were coming from the west and interviewed at the eastern border) or they were not  
458 able to see all the signposts yet (they were interviewed in more central road sections inside  
459 the park). Consequently, the following analyses on memory retention of signposts are  
460 restricted to the 122 respondents who were interviewed at the eastern border of the national  
461 park while they were travelling west to east.

462 The most cited sign post message was “Animals crossing” (61 responses), followed by “Do not  
463 feed the animals” (61), “Do not overspeed” (33), and “Do not litter” (31). We have collected  
464 more responses (186) than respondents (122) because people were asked to cite as many  
465 signs as they could remember. Only one respondent was not able to identify the road signs he  
466 had seen. Considering that the number of signposts displaying each message was also not  
467 balanced (*i.e.*, 8 signposts “Do not litter”, 6 “Animal Crossing”, 6 “Do not feed the animals”,  
468 and 2 “Do not overspeed”), we tested whether the proportion of citations of the four types of  
469 signposts from the respondents differed from the actual proportion of each type of sign post  
470 along the road (**Table 4**). We found an over-representation of “Do not overspeed” and an  
471 under-representation of “Do not litter” in the citations as compared to the number of  
472 signposts set on the road (Chi-square test of goodness-of-fit:  $\chi^2 = 35.1$ ,  $p < 0.001$ ).

473

474

**Table 4 around here**

475

476 The most cited animals drawn on the signs were elephants (73 responses), chimpanzees (22)  
477 and antelopes (9), but eleven respondents were not able to identify the animals that were  
478 drawn on the signs. Considering that the number of signposts showing the animal images was  
479 not balanced (*i.e.*, ten signposts displaying chimpanzees, four displaying elephants and two  
480 displaying antelopes), we tested whether the proportion of citations of the three types of  
481 animals from the respondents differed from the actual proportion of each type of sign post  
482 along the road. There was an over-representation of elephants and an under-representation  
483 of chimpanzees in the number of citations as compared to the actual number of signposts (chi-  
484 square test of goodness-of-fit:  $\chi^2 = 114.5$ ,  $p < 0.001$ ).

485 The respondents were presented with some stickers of signposts and they were asked to rank  
486 the rules they would be willing to observe on their next trip on the road (afterward, they were  
487 offered the sticker corresponding to the chosen rule). “I do not overspeed” was ranked  
488 number one by 50% of the respondents (190), followed by “I do not feed the animals” (130)  
489 and finally “I do not litter” (63). Details about ranking can be found in **Table 5**.

490

491

***Table 5 around here***

492

493 At the end of the survey, the respondents who were able to complete the survey were  
494 awarded with the choice of a sticker that they picked. There were three types of stickers: “I  
495 do not feed wildlife”, “I do not overspeed”, and “I do not throw my garbage”. We got the same  
496 ordering between the three rules as the highest number of stickers taken was for “I do not  
497 overspeed” (140 = 37%), followed by “I do not feed wildlife” (125 = 33%) and “I do not throw  
498 my garbage” (93 = 24%). Few respondents decided not to take any sticker (24 = 6%  
499 respondents).

500 To assess the knowledge of respondents about the speed regulations, we asked them about  
501 the speed limit in the national park. The majority of respondents gave a correct answer as 311  
502 (81 %) replied with a speed less than or equal to 40 km/h, while 66 respondents (17%) replied  
503 with a speed limit that was greater than 40 km/h (Binomial test:  $p < 0.001$ ). Six respondents  
504 did not reply. The maximum speed limit mentioned was 100 km/h while the minimum speed  
505 limit mentioned was 0 km/h (this was mentioned by four pedestrians who told us they had no  
506 knowledge about speed measurement of vehicles and motorbikes).

507

#### 508 **4. Discussion**

509 This exploratory study was conducted on a high-traffic road crossing a National Park in Uganda  
510 with the aim to investigate the knowledge and perception of people about baboons they could  
511 have encountered on this road. Many respondents reported that they often see wild animals  
512 on the road, and the animals being seen the most were the baboons. This is consistent with  
513 the high baboon presence that we witnessed on this road section. Indeed, baboons were  
514 observed on the road very often (60% of half-days of monitoring). A previous study carried  
515 out in Mikumi National Park, Tanzania, showed that savannah baboons, which mainly travel  
516 through heterogeneous landscapes (Strandburg-Peshkin *et al.*, 2017), tend to use human-  
517 made roads to commute to their sleeping sites and exhibit goal directed movements to or  
518 away from habitat features (Kitegile *et al.*, 2022). Groups of Moor macaques in Indonesia  
519 (Riley & Priston, 2010; Morrow *et al.*, 2019) and rhesus macaques in India (Pragatheesh, 2011)  
520 are mainly attracted to the road by food leftovers regularly littered by road users. Additional  
521 investigation of the temporal and spatial pattern of baboon presence on the road crossing the  
522 northern part of Kibale National Park is needed to understand their motivation to come to this  
523 road.

524 The great majority of respondents told us that the baboon diet is composed of food crops like  
525 bananas, maize, cassava, and sweet potatoes as these are the crops they most frequently see  
526 the baboons feeding on. Several studies reported crop foraging in baboons, including some  
527 conducted in Kibale National Park in Uganda (Naughton-Treves *et al.*, 1998; Lacroux *et al.*,  
528 2019; Kyokuhaire *et al.*, 2023). Regular crop foraging in baboons could explain why the local  
529 people thought of food crops to be part of the baboon diet. A study in Wollo Ethiopia,  
530 performed through surveys of local people, indicated that baboons visited a number of crops,  
531 many being cereals like sourghum and maize (Kifle, 2021), while surveys conducted in Uganda,  
532 in Budongo Forest Reserve and in Kibale National Park, indicated that baboons preferred  
533 maize and cassava to other crops in that area (Hill, 2000; Lacroux *et al.*, 2019). Because  
534 baboons forage on a wide range of crop species (Hill, 2017), the variation in cultivated crops  
535 according to regional sites could explain why the respondents identified bananas as the main  
536 item in the baboon diet in the Kibale region.

537 A wide range of studies investigating local attitudes toward primates highlighted negative  
538 perceptions of species regularly involved in crop-foraging, which are usually referred to as  
539 “pests” (e.g. orangutans in Northern Sumatra: Campbell-Smith *et al.*, 2010; chimpanzees in  
540 Guinea-Bissau: Costa & Casanova, 2020; macaques and langurs in Sri Lanka: Dittus *et al.*, 2019;  
541 macaques in Sulawesi: Riley & Priston, 2010; Hardwick *et al.*, 2017). As baboons regularly visit  
542 crops in every region of Uganda (Kibale area: Lacroux *et al.*, 2019; Kyokuhaire *et al.*, 2023;  
543 Lake Mburo area: Kagoro-Rugunda 2004) we might have generally expected a negative  
544 perception of these primates from most of the respondents. And yet, only 10% of the  
545 respondents cited words referring to baboons as eliciting a feeling insecurity or being  
546 disgusting when they were asked to give three words about baboons. Some of the  
547 respondents told us baboons were annoying because they destroyed the crops, others stated

548 that baboons were either ugly or dirty animals, and a few of them reported that baboons  
549 misuse human space which made them hate the baboons. One person pointed out the  
550 dangerousness of baboons, declaring they could be deadly when disturbed. In contrast, a  
551 majority of people reported baboons as a source of happiness because they felt a sense of joy  
552 whenever they saw the baboons. We suspect that these people were delighted to see wild  
553 animals in a situation where they were not in conflict with them, as these types of encounters  
554 are becoming increasingly rare. However, this interpretation must be considered with caution  
555 because of the general context in which the interviews occurred. Firstly, people might have  
556 been afraid of being judged and punished as we introduced ourselves as researchers working  
557 in collaboration with Uganda Wildlife Authority, which is the organization responsible for  
558 enforcing the regulations in national parks. Secondly, as those who agreed to participate could  
559 not devote more than a few minutes to the interview, the time spent with each person during  
560 the survey may have been too short for them to feel confident. Third, even if most participants  
561 were from the Western region, responses could have been different between local people  
562 residing in the areas and farming adjacent to the park boundary and those living further  
563 away. In order to counteract these biases in a future study, it would be interesting to  
564 implement a longer questionnaire and to record whether the people are involved in farming  
565 (Leblan, 2011; Setchell *et al.*, 2017).

566 Words related to empathy were also cited by some respondents, and this was basically  
567 because they thought that the baboons often come on the road to beg because they lack food  
568 in the forest (which is not the case, as revealed by the monthly phenology monitoring of the  
569 Sebitoli Chimpanzee Project). Alternatively, one respondent said he felt some empathy for  
570 them because he thought they feel pain as a result of their red bumps (red colour stood for  
571 burnt skin according to him). Other respondents talked about baboons having a human

572 likeness. Some were pleasantly surprised by their social life and the way they cared for their  
573 infants and juveniles. However, most of the respondents who talked about resemblances with  
574 humans declared they were from the Islamic religion and they were taught the baboons were  
575 once humans who were cursed by Allah because they were disobedient to him, which made  
576 them have that kind of body structure and look. According to the Koran, God metamorphoses  
577 humans for their misconduct and gives them the form of animal species reputed to be the  
578 most repulsive or ignominious, such as the dog, the pig or the monkey (Benkheira, 2000; Cook,  
579 1999). As such, baboon resemblances with humans might either be associated with a positive  
580 or negative representation depending on the socio-cultural identity. In order to better  
581 understand the variations in perception of baboons across religions and beliefs, it would be  
582 interesting in a future study to identify more precisely the religious community with which  
583 each person identifies.

584 Many respondents told us that baboons attract a lot of tourists and are a source of financial  
585 income for Uganda. Feeding wildlife is a means of facilitating close observation and interaction  
586 with wildlife, including by the tour operators (Orams, 2002). There are assorted reasons as to  
587 why humans give food to wild animals, with recreation being one of them (Murray *et al.*,  
588 2016). Very few of the local people who were interviewed in this study said that they feed the  
589 baboons, although the practice appeared to be very common on this road a few years ago  
590 (Maille *et al.*, 2017). This decrease in active provisioning of baboons alongside the road is  
591 confirmed by data collected during traffic census: we have observed only five vehicle  
592 occupants giving food to baboons in a total of 18.5 hours of scheduled observations. A few of  
593 the people we interviewed attempted to explain the reasons why they had stopped feeding  
594 the baboons when meeting them on the road, even though they were used to doing so before.  
595 Some reported to us that they have regularly seen the baboons jump on their cars or

596 motorbikes in an attempt to get food while they were travelling on the road, and they added  
597 that aggression from baboons can occur in effort of trying to get food. This goes head to  
598 explain the claims of some road users about baboon aggressiveness, and the related insecurity  
599 when meeting them. In addition to that, several respondents reported that they were not  
600 comfortable with the idea of feeding baboons because they always thought that if people kept  
601 on feeding the baboons, they would end up being poisoned by people who really hate them.  
602 Wild animals may indeed be deliberately killed because they are in conflict with people, and  
603 this motivation may be reinforced if they are used for bushmeat, traditional medicine, ivory,  
604 horns or fur (Ogada, 2014). Finally, other road users that we have interviewed told us that  
605 they had stopped feeding the wildlife though they were used to doing it before, and some  
606 attributed this behavioural change to the signposts that were put by the road sides.

607 In order to improve biodiversity conservation as well as safety for road users and road  
608 cleanliness, signposts were put on the road displaying messages like “Do not overspeed”, “Do  
609 not litter” and “Do not feed the animals”. The biggest number of respondents confirmed they  
610 had seen the signages and were able to read and tell what was written or drawn on them.

611 When people were asked about the road regulation that they would be more motivated to  
612 observe on their next trip, not feeding the animals when passing by the road came as their  
613 second preoccupation. Most people were even more aware of the need to reduce their speed  
614 when driving through the national park, which could help to decrease the frequency of animal  
615 deaths through collisions with vehicles. In addition, the vast majority of the vehicle occupants  
616 surveyed had good knowledge about speed limit in a national park. By contrast, only one in  
617 five people made it a priority to stop littering.

618 When people were asked to cite the signposts they could remember, very few of them cited  
619 “Do not litter”, although these signposts were the most numerous along the road (8 out of 22

620 signposts). Littering is a general problem in Uganda despite the several legal provisions  
621 against the vice. Such attitude explains the large number of plastic bottles (Krief *et al.*, 2020)  
622 and food leftovers that we have recorded on the roadsides. Throughout Africa, baboons are  
623 attracted to anthropogenic areas because of rubbish bins (e.g., Mazué *et al.*, 2023, Moy *et al.*,  
624 2023). In Madhya Pradesh, India, some groups of rhesus macaques that live in the vicinity of  
625 roads are even more attracted to roads during peak tourist periods, when both food waste  
626 and provisioning are higher (Pragatheesh, 2011). One of the approaches of communication  
627 used in national parks is interpretive signages aimed creating visitor awareness (Davis &  
628 Thompson, 2011). However, signposts displaying the “Do not litter” message might not be  
629 convincing enough, because of the vocabulary used or the drawing displayed on it. Those  
630 signposts might also be neglected because they are not directly related to the safety of road  
631 users. Indeed, legitimacy of road regulations for road users essentially depends on their ability  
632 to effectively diminish the number of deaths and injuries on road. Thus, the less drivers  
633 perceive road safety interventions to be effective in reducing road accidents, the less they are  
634 likely to be influenced (Auzoult *et al.*, 2015). Therefore, we recommend raising awareness of  
635 the increased risk of accidents when baboons are on the road. Sensitization of communities  
636 could be based on the fact that baboons are likely to be attracted to roads by anthropogenic  
637 food, whether this comes from active feeding or littering.

638

639 This exploratory study provides some intriguing information about usage and perception of  
640 people driving, cycling or walking on a road crossing a national park in Uganda. The majority  
641 of the people surveyed lived in the region, which gives us insights into local attitudes toward  
642 baboons that are the most frequently encountered wild animals on this road and in the  
643 neighbouring villages. Most of the respondents did not show a negative attitude toward

644 baboons, although those primates are regularly visiting fields and gardens to forage on crops.  
645 In order to gain a better understanding of the participants' level of knowledge about the  
646 baboons, more questions about the ecology and behaviour of the nonhuman primate species  
647 targeted in the study should also be added (Sousa *et al.*, 2014). In addition, collecting  
648 qualitative data (using unstructured interviews while considering the socio-cultural variation;  
649 e.g. Waters *et al.*, 2019; Ampumuza & Driessen, 2021) might help to better disentangle factors  
650 driving interactions between humans and nonhuman primates in the context of roads, thus  
651 facilitating changes in people's behaviour in favour of conservation. Finally, in order to gain a  
652 better understanding of how geographical and cultural variations explain differences in  
653 attitudes in favour of primates and other wild animals, it would be worthwhile comparing the  
654 perceptions of road users in different areas where road signages have been installed to raise  
655 awareness of biodiversity conservation.

656

#### 657 **Conflict of interest**

658 We declare that there is no conflict of interest for this publication. The funders had no role in  
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661

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843

844 **Figure captions (English)**

845

846 Figure 1. Pictures of signposts set along the road crossing Kibale National Park. Top row: The  
847 three signposts showing an “Animal crossing” message with various animals depicted (left:  
848 mosaic of chimpanzee, antelopes and elephant; middle: elephant; right: chimpanzee). Bottom  
849 row: Signposts showing road regulations (left and right: “Do not feed the wildlife”, middle:  
850 “Do not litter”; the signposts showing the “Do not overspeed” message cannot be pictured  
851 because they were stolen at the time of photography).

852

853 Figure 2. Maps showing the location of research station, road signs and bumps along the road  
854 crossing Kibale National Park, together with marks depicting presence of baboons, food  
855 remains/leftovers and road deaths (dead animals). GPS points recorded in period 1 (22/01 to  
856 06/04/2023: A) and period 2 (from 08/04 to 31/05/2023: B) are presented separately for  
857 clarity, to avoid overlapping of the many landmarks depicted. Map made with OpenStreetMap  
858 in QGIS.

859

860 Figure 3. Distribution of vehicle types for the people interviewed (red) as compared to the  
861 actual road traffic (blue).

862

863 Figure 4. Most often seen domestic and wild animals reported by respondents (N= 383)

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868 **Légendes des figures (Français)**

869

870 Figure 1. Photos des panneaux de signalisation placés le long de la route traversant le parc  
871 national de Kibale. Rangée du haut: Les trois panneaux affichant un message « Animal crossing  
872 » avec différents animaux représentés (à gauche: mosaïque de chimpanzés, d'antilopes et  
873 d'éléphants; au milieu: éléphant; à droite: chimpanzé). Rangée du bas: Panneaux indiquant  
874 les règles de circulation (à gauche et à droite: « Ne pas nourrir les animaux sauvages », au  
875 milieu: « Ne pas jeter de détritrus » ; les panneaux indiquant le message “Ne pas dépasser la  
876 vitesse autorisée” ne peuvent être photographiés car ils avaient été volés au moment de la  
877 prise de photographies).

878

879 Figure 2. Cartes montrant l'emplacement de la station de recherche, les panneaux de  
880 signalisation et les ralentisseurs le long de la route traversant le parc national de Kibale, ainsi  
881 que les repères indiquant la présence de babouins, de restes de nourriture et d'animaux  
882 retrouvés morts sur la route. Les points GPS enregistrés au cours de la période 1 (du 22/01 au  
883 06/04/2023: A) et de la période 2 (du 08/04 au 31/05/2023: B) sont présentés séparément  
884 pour plus de clarté, afin d'éviter le chevauchement des nombreux points de repère  
885 représentés. Carte réalisée avec OpenStreetMap dans QGIS.

886

887 Figure 3. Répartition des types de véhicules pour les personnes interrogées (en rouge) par  
888 rapport au trafic routier réel (en bleu).

889

890 Figure 4. Animaux domestiques et sauvages les plus souvent observés par les répondants (N=  
891 383)

892 **Table captions (English)**

893

894 Table 1. Questionnaire used for data collection.

895

896 Table 2. Age groups in relation to the regions of origins of the Ugandan respondents.

897

898 Table 3. Number of respondents who cited words from each of the six categories: “baboons  
899 as source of happiness”, “baboons as a tourism attraction”, “baboons having similarities with  
900 humans”, “baboons eliciting a feeling of insecurity” “baboons eliciting compassion”, “baboons  
901 being disgusting”. The values correspond to quotations as first, second and third word.  
902 Categories are presented in order of importance (from the greatest to the lowest number of  
903 respondents) for the first word cited.

904

905 Table 4. Citations of each type of sign post: observed values (percentages and number of  
906 responses) and expected values (percentages and number of each type of sign post on the  
907 road).

908

909 Table 5. Choice of rules to be observed on the respondent’s next trip. Values are first, second  
910 and third choice.

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917 **Légendes des tableaux (Français)**

918

919 Table 1. Questionnaire utilisé pour la collecte de données.

920

921 Table 2. Groupes d'âge des répondants ougandais en fonction de leur région d'origine.

922

923 Table 3. Nombre de répondants ayant cité des mots de chacune des six catégories: "Les  
924 babouins comme une source de joie", "les babouins comme une attraction touristique", "Les  
925 babouins comme ayant des similitudes avec les humains", "Les babouins suscitant un  
926 sentiment d'insécurité" "Les babouins suscitant de la compassion", "Les babouins étant  
927 dégoûtants". Les valeurs correspondent aux nombre de citations en tant que premier,  
928 deuxième et troisième mot. Les catégories sont présentées par ordre d'importance (du plus  
929 grand au plus petit nombre de répondants) pour le premier mot cité.

930

931 Table 4. Citations de chaque type de panneau : valeurs observées (pourcentages et nombre  
932 de réponses) et valeurs attendues (pourcentages et nombre de chaque type de panneau sur  
933 la route).

934

935 Table 5. Règlements que les répondants se sont engagés à respecter lors de leur prochain  
936 trajet. Les valeurs correspondent au nombre de répondants ayant placé la réglementation en  
937 tant que premier, deuxième ou troisième choix.

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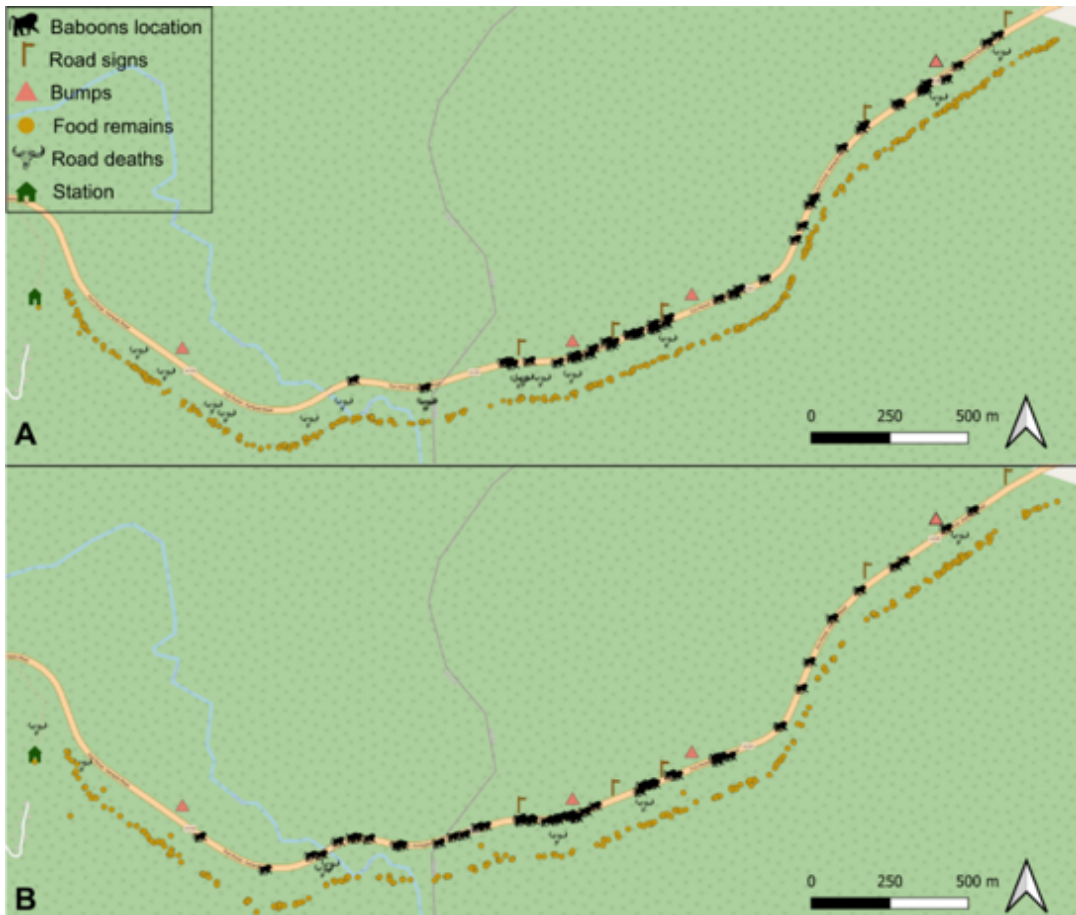
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Figure 1



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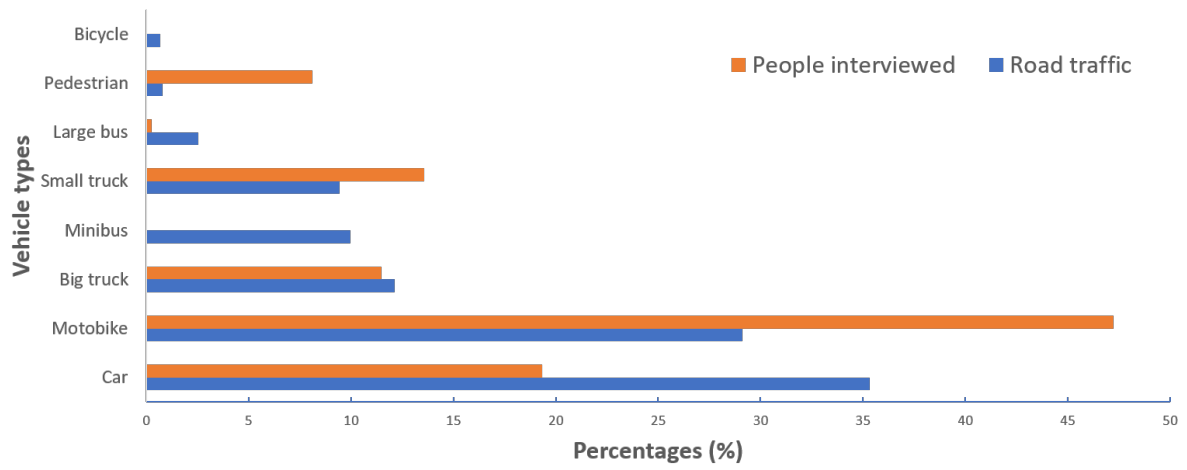
Figure 2

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**Figure 3**

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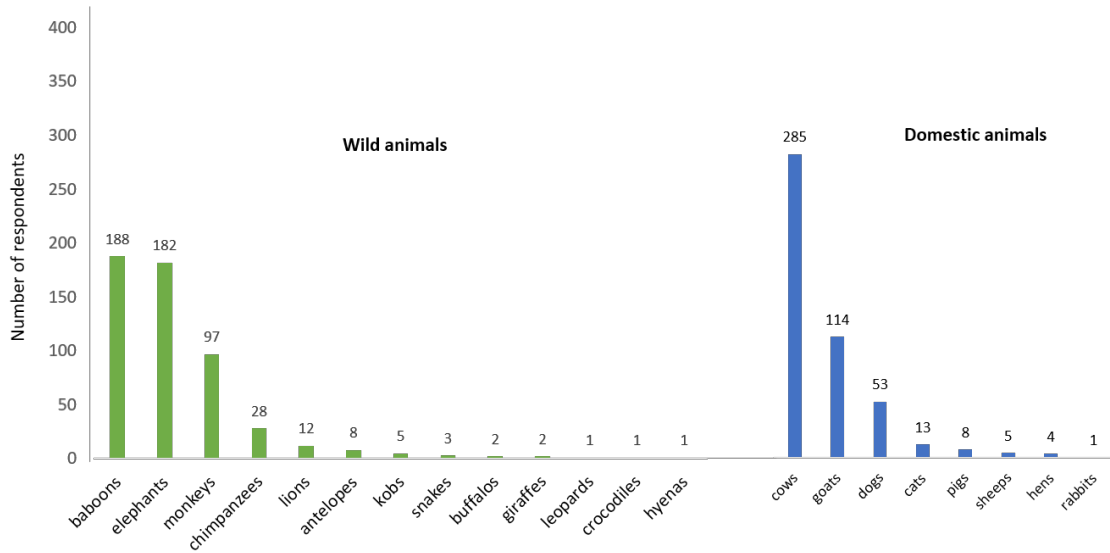
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**Figure 4**

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Question	Type of question
Hello, I am a student working for a research project led by the National Museum of Natural History in France, in partnership with Makerere University and the Uganda Wildlife Authority. Here you are on a road that crosses Kibale National Park. We would like to ask you a few questions about this road. This interview will take 5 minutes only and your answers will, of course, be anonymous. At the end of the interview, we will give you a small present. Do you agree to continue?	Yes / No (if “No”, interview stopped)
Is it your first time to do this survey?	Yes / No (if « Yes », interview stopped)
We will first ask you few questions to better know who you are. How old are you?	Age category
Where are you from?	Closed question
What country? (If not from Uganda)	Open question
What part of Uganda? (If from Uganda)	Closed question
In your daily life, do you often see any wild or domestic animals?	Yes / No
What animals?	Open question (free listing)
Now we would like to know why you are on this road today. What is the reason for your travel?	Closed question
There are often animals on this road. Have you seen any animals on the road during the past minutes?	Yes / No
Do you know the name of these animals? (Ask for a physical description of the animals for confirmation of the species)	Open question
What animals? ( <i>for interviewer only</i> )	Closed question
Did you feed them? (if they have seen baboons)	Yes / No
With what food? (if they have fed baboons)	Open question (free listing)
Did you expect to feed the baboons with this food while traveling? (if they have fed baboons)	Yes / No
Why did you feed the baboons? (if they have fed baboons)	Open question
There are many baboons in this forested area. Do you know what food baboons usually eat?	Open question (free listing)
May you tell us 3 words that baboons make you think about?	Open question (limited listing)
There have been some developments on this road recently. Have you seen some road signs?	Yes / No
What was written or drawn on those signs? (if seeing signs)	Open question (limited listing)
What animals were drawn on the signs?	Open question (limited listing)
To your knowledge, what is the speed limit in a national park (in km/h)?	Number

In a national park, you must limit your speed to 40 km/h, and it is forbidden to throw the garbage and feed the animals. What would you be willing to do on your next trip down this road?	Closed question (ranking)
I am therefore delighted to offer you one sticker that you might display on your vehicle, your house or even a notebook or computer! Please choose between "I do not overspeed", "I do not throw my garbage", "I do not feed animals", "I LOVE UGANDAN WILDLIFE »	Closed question
Thank you very much for taking a few minutes to answer us. We wish you a good trip! Drive safe! Any comments	Open question
Location : road section ( <i>for interviewer only</i> )	Closed question
Direction of vehicle ( <i>for interviewer only</i> )	East to West / West to East
Type of vehicle ( <i>for interviewer only</i> )	Closed question
Sex of respondent ( <i>for interviewer only</i> )	Male / Female
Who was the respondent? ( <i>for interviewer only</i> )	Driver / Passenger
Number of passengers ( <i>for interviewer only</i> )	Number
Children in the vehicle? ( <i>for interviewer only</i> )	Yes/ No

978

979

980 **Table 2**

981

<b>Age group</b>	<b>Central</b>	<b>East</b>	<b>North</b>	<b>West</b>	<b>TOTAL</b>
<b>15-25</b>	9	3	1	83	96
<b>26-35</b>	19	13	7	114	153
<b>36-45</b>	13	7	5	66	91
<b>46-55</b>	2	2	0	19	23
<b>56-65</b>	2	1	0	8	11
<b>+66</b>	0	1	0	1	2
<b>TOTAL</b>	<b>45</b>	<b>27</b>	<b>13</b>	<b>291</b>	<b>376</b>

982

983

984 **Table 3**

985

<b>Words cited</b>	<b>Source of happiness</b>	<b>Tourism attraction</b>	<b>Similarities with humans</b>	<b>Feeling of insecurity</b>	<b>Compassion</b>	<b>Disgust</b>
<b>First word</b>	200	42	37	27	12	7
<b>Second word</b>	14	60	21	12	11	1
<b>Third word</b>	3	4	8	3	2	0
<i>TOTAL</i>	<i>217</i>	<i>106</i>	<i>56</i>	<i>42</i>	<i>25</i>	<i>8</i>

986

987

988 **Table 4**

989

	Observed value (citations)	Expected value (actual signposts)
<i>Animal crossing</i>	50% [61responses]	27% [6 signposts]
<i>Do not feed the animals</i>	50% [61 responses]	27% [6 signposts]
<i>Do not overspeed</i>	27% [33 responses]	10% [2 signposts]
<i>Do not litter</i>	25% [31 responses]	36% [8 signposts]

990

991

992 **Table 5**

993

<b>Rule</b>	<b>I do not overspeed</b>	<b>I do not feed the animals</b>	<b>I do not litter</b>
<b>First choice</b>	190	130	63
<b>Second choice</b>	93	160	130
<b>Third choice</b>	100	93	190

994