Appendix 1: Variables created based on pack examination

1. Pack ID (1-7000)
2. Date collected (day/month/year)
3. District/Province
4. Number of khoroo in districts
5. Khoroo ID
6. Brand
7. The presence of a Mongolian tax stamp
8. The presence of marks indicating that a tax stamp was originally on the pack
9. The presence of an approved pictorial warning.
10. The presence of an approved pictorial warning covering 50% of the front of the pack
11. The presence of an approved pictorial warning covering 50% of the back of the pack
12. The type of pictorial warning is on the pack (6 possible pictures)
13. Health warning message in Mongolian
14. Health warning message printed on both the front and the back of a pack.
15. Name of the manufacturer or the importer printed on the pack
16. Country where the pack originated from
17. Country of origin of the importer.
18. Tar content per cigarette
19. Nicotine content per cigarette
20. The presence of the statement that cigarettes are allowed for sale in Mongolia
21. The presence of any promotional images, messages or other information to attract the consumers (If yes, describe the image or write the text)
22. The presence of "Duty Free" sign
23. The presence of health warning in a foreign language
24. The presence of a foreign tax stamp

Appendix 2: Population weights

Appendix 3: Indicators of the legality of a pack of cigarettes across rounds

There are two stages of selection: (1) the probability that a Khoroo/Bagh is selected, and (2) the probability that a cigarette pack is selected. The probability of selecting a Khoroo/Bagh is a function of the number of Khoroos/Bagh selected as a proportion of the total number of Khoroos or Baghs in the district (or province, in the case of Bayan Ulgii and Dornod) (Eq. 1).

$$P1 = \frac{n_i}{N_i} \quad (1)$$

n_i −Number of Khoroos selected in district i (or province, in the case of Bayan Ulgii and Dornod)
N_i − Total number of Khoroos in a district i (or province, in the case of Bayan Ulgii and Dornod)

The probability of a pack being selected (P2) is equal to the number of packs collected as a proportion of the total potential packs available in that Khoroo/Bagh (Eq.2). The total potential available packs is a function of the population living in the Khoroo, smoking prevalence and the average number of cigarettes smoked per day by that population. Since smoking prevalence by city/province is unknown, national prevalence estimates are used.

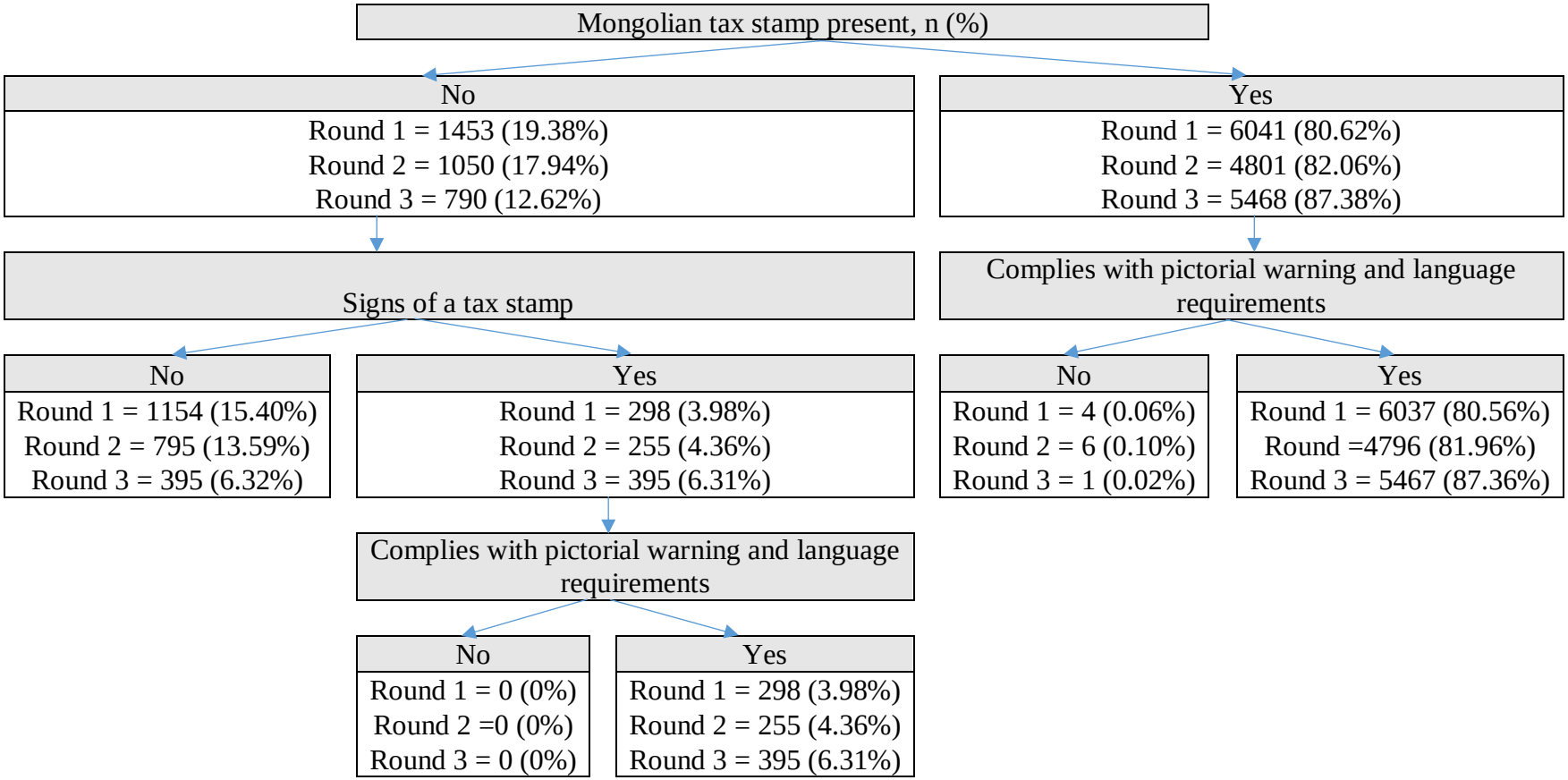
pc_j −Total number of packs collected in Khoroo/Bagh *j*
PC_j − Total potential number of packs available in Khoroo/Bagh *j* on day of collection, where:

$$PC_j = \big(Population\ of Khoroo\ or\ Bagh\ j * Mongolian\ Smoking\ Prevalence\ (SNAPS\ 2013\ figure) * Average\ cigarettes\ smoked\ per\ day (SNAPS\ 2013\ figure)\big)/20 \quad (2)$$

Base weights are calculated by inverting the probabilities of selection and multiplying the inverted ratios (Eq. 3).

$$Base\ weight_{ij} = \frac{1}{P1} * \frac{1}{P2} \quad (3)$$

Appendix 3: Indicators of the legality of a pack of cigarettes across rounds



Appendix 4: Data presented in Figures 2, 3 and 4

	Round 1 weighted	Round 2 weighted	Round 3 weighted
	n (%)	n (%)	n (%)
Country			
China	15 (1.37%)	9 (1.11%)	1 (0.19%)
Japan	34 (3.05%)	20 (2.56%)	10 (2.64%)
Kazakhstan	74 (6.74%)	86 (10.91%)	25 (6.23%)
Republic of Korea	541 (49.14%)	308 (39.08%)	54 (13.59%)
Mongolia	59 (5.33%)	43 (5.52%)	28 (7.07%)
Other	36 (3.31%)	30 (3.76%)	21 (5.43%)
Russia	69 (6.24%)	41 (5.16%)	9 (2.38%)
Ukraine	273 (24.82%)	251 (31.88%)	246 (62.46%)
Manufacturer			
British American Tobacco	12 (1.12%)	4 (0.54%)	2 (0.46%)
China Tobacco	14 (1.3%)	8 (1.02%)	0 (0%)
Imperial Tobacco	280 (25.4%)	256 (32.52%)	247 (62.81%)
Japan Tobacco International	135 (12.23%)	80 (10.13%)	29 (7.29%)
KT&G	498 (45.22%)	304 (38.68%)	48 (12.21%)
Mongol Tamkhi Co.	58 (5.24%)	42 (5.32%)	26 (6.68%)
Other	55 (4.99%)	15 (1.87%)	20 (5.02%)
Philip Morris International	50 (4.5%)	78 (9.92%)	22 (5.53%)
Brand			
Esse Change	411 (37.3%)	225 (28.57%)	21 (5.43%)
Other	304 (27.57%)	187 (23.79%)	97 (24.62%)
West Red	232 (21.08%)	228 (28.99%)	233 (59.13%)
Esse Blue	86 (7.78%)	52 (6.64%)	14 (3.56%)
Ulaan Shonkhor	43 (3.86%)	37 (4.64%)	17 (4.43%)
Parliament Night Blue	27 (2.41%)	58 (7.36%)	11 (2.82%)
Province			
Ulaanbaatar	1038 (94.25%)	744 (94.54%)	367 (93.02%)
Bayan-Ölgii	29 (2.68%)	23 (2.91%)	9 (2.3%)
Dornod	34 (3.07%)	20 (2.55%)	18 (4.68%)
Ulaanbaatar province			
Bayangol	166 (25.73%)	117 (22.79%)	36 (12.96%)
Bagakhangai	3 (0.4%)	1 (0.23%)	1 (0.32%)
Baganuur	19 (2.86%)	13 (2.46%)	5 (1.83%)
Bayanzurkh	104 (16.06%)	135 (26.24%)	109 (39.28%)
Chingeltei	108 (16.74%)	25 (4.91%)	25 (9.08%)
Khan Uul	77 (11.86%)	76 (14.67%)	29 (10.41%)
Nalaikh	4 (0.65%)	17 (3.28%)	5 (1.7%)
Sukhbaatar	57 (8.79%)	37 (7.27%)	28 (10%)
Songinokhairkhan	109 (16.91%)	93 (18.15%)	40 (14.41%)
Other features			

Foreign tax stamp	20 (0.27%)	41 (0.71%)	21 (0.33%)
Duty free stamp	9 (0.12%)	35 (0.59%)	16 (0.25%)