# Latin American Migration Project - Universidad de la República









# **Ethnosurvey of Recent Immigration** in Montevideo

Methodology

General coordination: Victoria Prieto Rosas (Programa de Población – FCS, Udelar)

**Questionnaire design**: Jorge Durand (University of Guadalajara - LAMP), Clara Márquez (DTS - FCS, Udelar), Karen Pren (Princeton University - LAMP), Victoria Prieto Rosas, and Sofía Robaina (Programa de Población - FCS, Udelar)

Sampling: Guillermo Zoppolo, Ana Coimbra, and Juan José Goyeneche (IESTA-FFCCEEA, Udelar)

Fieldwork Coordinator: Clara Márquez (DTS - FCS, Udelar)

Fieldwork Secretary: André Fay, Daniel Espinoza, and Camila Montiel

**Questionnaires' supervision:** Julieta Bengochea (Programa de Población- FCS, Udelar), Martina Gómez, Clara Márquez, Camila Montiel, Victoria Prieto Rosas and Sofía Robaina.

Interviewers/Supervisors Training: Karen Pren

Interviewers: Blanche Kambou, Camila Montiel, Camila Pérez, Cecilia Elmallián, Daniel Espinoza, Diego Schroeder, Federico Lacaño, Gabriel Valdera, Gisely Reyes, Joaquín Méndez, Juan Pedetti, Laura Cruz, Marión Tejera, Martina Paz Gómez, Pablo Montoli, Paolo Venosa, Rosa Martínez and Sofía Pérez

Data entry: Verónica Lozano Canales (Universidad de Guadalajara)

**Consistency checks:** Karen Pren, with the collaboration of Clara Márquez, Julieta Bengochea, Camila Montiel and Martina P. Gómez

Advisory board: Jorge Durand and David Lindstrom (Brown University - MMP LAMP)

**Funding:** Programa I+D Comisión Sectorial de Investigación Científica, Universidad de la República; UNICEF – Uruguay; Inter-American Development Bank; and Latin American Migration Project (Princeton University and University of Guadalajara).



#### Acknowledgements

We are grateful for the confidence of the financing institutions and to Dr. Jorge Durand and Douglas S. Massey Ph.D., - Project Investigators for the Latin American Migration Project and the Mexican Migration Project, for supporting the project that started this survey. We thank the institutions that financed this study and to the academic community - specialized in migration studies - that generously dedicated part of their time to discuss our research design: Julieta Bengochea, Marcela Cerrutti, Silvia Giorguli, Edith Gutiérrez, María Aysa Lastra, David Lindstrom, William Mejía, and Emilio Parrado. We also appreciate the support of colleagues from the Programa de Población, especially from Adela Pellegrino and Martín Koolhaas, who helped us in different stages of this process, the great contribution of Sofia Robaina in the conception of this project, and the advice of Juan Ceretta and Valeria España in the consistency of the documentation section of the questionnaire.

In the long and strenuous process of ENIR's fieldwork, the support of the Association of Dominicans in Uruguay "Juana Saltitopa", Manos Veneguayas, "Jueves Migrantes" of Casa Mario, and the Migrant Department of the Ministry of Social Development was fundamental. But without a doubt this project is in good part the result of the commitment and enthusiasm of the 18 surveyors and our fieldwork coordinator who made out of it an experience of collective enrichment as well as the generosity and trust of the 803 people from the Cuban, Dominican, Peruvian and Venezuelan communities who shared their life stories. To them our greatest gratitude.

#### Introduction

The Recent Immigration Etnosurvey (ENIR) conducted in the city of Montevideo between July 26, 2018 and March 13, 2019, emerges from a transnational scientific collaboration between the University of the Republic and the Latin American Migration Project (LAMP).

The sample design and the implementation were carried out in collaboration with the Instituto de Estadística (IESTA) from Universidad de la República (Udelar). The field work involved 18 interviewers, three field secretaries, four questionnaire supervisors, one person for the data digitalization (MMP-University of Guadalajara), and three researchers from Facultad de Ciencias Sociales from Udelar who, together with the manager of the LAMP project (Princeton University), worked on the data consistency process for 12 months. This project received financial support from the Latin American Migration Project, UNICEF Uruguay, the Inter-American Development Bank, and Comisión Sectorial de Investigación Científica from Udelar.

This document presents the main characteristics of the study universe, the inclusion criteria, the sample design and recommendations for the estimation of proportions corrected by sampling weights.

Microdata users are advised to read this document carefully before conducting any microdata analysis.

## Universe and respondent inclusion criteria

A distinctive feature of the statistical operation described here is the inclusion of both private and collective dwellings. Most of the evidence on recent immigration in Uruguay comes from the Continuous Household Survey carried out annually by the National Institute of Statistics. This source provides information on the living and employment conditions of migrants regardless of their documentary status, but excludes collective housing (lodging houses, hotels, hostels or shelters). Qualitative studies suggest that this type of household is a significant alternative for newly arrived immigrants in Montevideo (Fossatti and Uriarte, 2018b, 2018a). For this reason, it was essential to use a sample design that allowed to include this type of housing.

The respondents met the following criteria:

- were born in Cuba, Dominican Republic, Peru or Venezuela
- reside in the department of Montevideo at the time of the survey
- were 18 years of age or older at the time of the survey

These three criteria define the universe of respondents; however, the population enumerated at ENIR is larger since it includes data on each and every member of the respondent's family living in Uruguay and in another country. In this sense, it should be pointed out that our unit of analysis is twofold, persons (respondent and other members of his or her family) and households. The definition used for household matches the one used historically by the MMP and LAMP project. It is a definition that privileges conjugal and consanguinity relationships regardless of the place of residence of the relatives with whom these kinship ties are maintained. The main reason is that it is more appropriate for a migrant respondent to share information about close relatives than information about other non-relatives members of his or her household. The following lists the members of the household who were included in the study universe.

- Respondent
- Respondent's current spouse (whether living with she/him or not)
- Children of both respondent and spouse (whether they live with them or not)
- Children only of the respondent (whether they live with she/him or not)
- Parents, siblings, cousins, aunts and uncles of the respondent or his/her spouse who live with him/her and either: (a) people that are financially dependent on the respondent and/or his/her spouse; or (b) people that do not constitute a second family unit
- Non-relatives with a relationship of economic dependence with the respondent or his/her spouse,

Visitors who shared housing with the respondent (whether they were relatives or not) at the time of the survey were excluded.

Acknowledging the limitations of the applied definition of household, a question was included to capture whether the respondent shares the dwelling with other non-relatives. Specifically, we asked how many persons who were not part of his or her family unit were living with him or her, and how many of them were foreigners (Table E).

## Sample design and its implementation at the field work

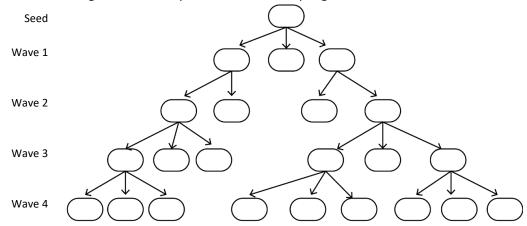
Due to the fact that we did not have an updated census sampling framework to design a random sample – the previous census was conducted in 2011 census, prior to the occurrence of immigration that interests us here - nor with a universal register of the migrant and refugee population<sup>1</sup>, and knowing that there is a high number of asylum seekers among the immigrants of Cuban origin who arrived in the last two years, we chose to treat these subjects hidden or hard-to-reach population.

The literature on sampling techniques for this kind of population recommends the use of non-probabilistic sampling (Gayet and Fernandez-Cerdeño, 2009; Platt, Luthra and Frere-Smith, 2015). Among them, one of the most widely used is Respondent Driven Sampling (RDS), which is a type of sampling that replicates the "snowball" case selection strategy, but it incorporates controls for selection biases correcting for the most popular participants assuming the ones with largest social networks are more likely to be referred to and, therefore, may be over-represented in the sample. Originally developed in the field of epidemiological studies to monitor the spread of sexually transmitted diseases and to overcome the difficulties of working with embarrassing behaviors, RDS is now applied to a wide diversity of behaviors and populations (Volz and Heckathorn, 2008).

As its name indicates, this sampling builds the population framework from the information provided by the respondents. Thus, each one is asked about the number of people with similar attributes that they know (Illustration 1). This information allows on the one hand to approximate the universe and on the other hand is a key input to adjust with a popularity criterion each respondent's weight in the sample.

<sup>&</sup>lt;sup>1</sup> Although there are several administrative registries that capture asylum seekers applications, temporary and permanent residence permits, none of them fully covers the universe of study. In addition, there are a number of ethical and data protection concerns that would have inhibited considering their use for this purpose.

**Illustration 1.** Diagram of the respondent driven sampling



Source: own elaboration.

To prevent one person from referring another directly - who may not wish to be contacted or identified - RDS samples are supported by an incentive system in the form of voucher-invoices administered by the respondent. In this way, the researcher does not contact future referrals, but rather the respondent invites others to participate and they communicate with the researcher. The informant receives at the end the incentive - in the form of money or vouchers - for having answered the survey and another one for each referral he or she recruits. There are some derivatives of RDS that hold for the participation of researchers, such as researcher-assisted RDS (Platt, Luthra and Frere-Smith, 2015).

In Uruguay there are several experiences of RDS applied to the study of hidden populations that include trans people (Coimbra, Goyeneche and Zoppolo, 2014) or smoke cocaine's users (JND, 2017), to cite some examples. To develop the sample design of the ENIR and under the direction of IESTA, we implemented an adaptation of the RDS similar to the researcher-assisted RDS used by Platt et al. (2015). To develop the sample design of the ENIR, we implemented an adaptation of the RDS under the direction of IESTA. In this case, we started with five informants from each community of origin – the so-called seeds that were selected following a criterion of heterogeneity in terms of date of arrival in Uruguay, educational level, and sex. From these seeds or social base, we started the chain of referral by asking each respondent for up to three contacts, whose names and phone numbers the informant could choose to share immediately or, alternatively, to personally extend the invitation to his/her referrals so that the potentially interested participants could contact us.

As the project was not able to fund monetary incentives, we opted to promote participation through symbolic incentives that include a detailed presentation of the conditions and purposes of the study together with handing in a notebook specially prepared for newly arrived migrants. In this notebook - designed by the UNICEF Communication Department- we included information on migrant populations in Uruguay, frequently asked questions about migrants' rights, and a resource guide with telephone numbers, addresses and opening hours of national and local public services and NGOs (Figure 1).

Figura 1. Notebook given to respondents



Source: elaborated by UNICEF Uruguay.

In order to speed up contacts with potential informants, we centralized all information on referrals in an on-line worksheet handled by the field work secretary.<sup>2</sup> At the end of each survey, the interviewers entered the referrals data into this online form, which enabled the fieldwork secretary to contact the referrals by phone or WhatsApp to schedule an appointment to respond the survey. This strategy is more like an adaptation of the RDS called researcher-assisted RDS (Platt, Luthra, & Frere-Smith, 2015) than the more classic RDS.

- a) Addition of new seed (start new reference chains)
- b) Recruitment of new seeds in areas with a high concentration of migrants, including religious festivals and catechesis, sports activities (basketball and baseball), Peruvian restaurants, migrant associations with labor and legal advisory services (Manos Veneguayas and Casa Mario), and we attended the waiting room of Migrant Department at the Ministry of Social Development (MIDES). This strategy was implemented in December 2018.
- c) Incorporation of interviewers from Peruvian and Dominican origin, which resulted almost immediately in an improvement of recruitment rates among the Dominican community. The interviewers were gradually incorporated between October and December 2018.
- d) A workshop with the communities to discuss best practices to convey the symbolic incentive of participating in the survey. This resulted in a workshop held in October with members of the Dominican Association "Juana Saltitopa" and a meeting with the Peruvian Consul in Montevideo held in December.
- e) The preparation of a 1-minute video to disseminate via WhatsApp what the survey was about, how the referral strategy worked and what were the indirect benefits of answering the questionnaire and referring new contacts. We had the support of UNICEF which produced a video animation. This improved the communication between the field secretary and potential

<sup>2</sup> In the development of the fieldwork, an online Google form was used for each pollster to upload telephone data and names of referrals. In this way, contact information was shared online in real time so that the field secretary could make new appointments with potential informants. Referral name, phone number, and "status" information was loaded into this template. With this term we called the variable that collected the following categories about the informant "a. I saw the referral right there and did the survey", "b. The informant passed on the phone and name of the referral", "c. He prefers to communicate with the referral before giving his contact" and "d. He has no contacts or does not want to refer".

respondents, while providing a tool for the respondent to invite others by forwarding this video. This video began to be circulated in November 2018.

900 800 700 600 500 400 300 200 100 n Jul-18 Nov-18 Dic-18 Mar-19 Ago-18 Set-18 Oct-18 Ene-19 Feb-19 Cuba Perú R. Dominicana Venezuela Total

Figure 2. Cumulative number of surveys by month and origin of respondents

Source: ENIR 2018.

In summary, the main concessions to traditional RDS sampling made included the following: i) we enabled the use of replacements among those referred when any of them refused or were unavailable to respond; ii) we did not use monetary incentives, instead, we worked with the communities on the symbolic motivations of participation and implement audiovisual communication strategies to optimize the forms of contact and the efficient communication of information; iii) we used a field work secretary that centralized the contacts of those referred and scheduled appointments assisting the RDS; and, iv) we contributed to booting referral chains by adding seeds in the communities where the response rate was lower (Dominican Republic, Peru and Cuba) and by attending spaces with a high concentration of immigrants in order to shorten the period of time between the completion of one survey and the next.

Finally, ENIR imposed a challenge for the RDS, originally conceived for samples where the unit of survey and analysis is the individual. Here, however, the respondents were single migrants but the information they reported concerned other household members too. Those, in this case the unit of analysis extends to the whole family unit of the person in Montevideo and at origin. This triggered an assumption about the socialization of networks within a household. Firstly, we had to avoid the duplication of information about the members of the same household (two people belonging to the same household could duplicate information about the same household), for which we made sure that the spouse or other family member had not been contacted to participate in this study. For this purpose, we gave the participants a magnet that we asked them to stick on the refrigerator (understanding that the kitchen is a common space between those who share the main meal); in this way, each dwelling remained "marked" once we had surveyed one of its members (Figure 3). Secondly, we had to assume as household's network size that of the informant, which is a debatable assumption since it is not clear how many of the members of a network are common or not to the other members of the household. Imagine, for example, the case of an individual in a couple who includes among his contacts people he/she has met through his/her partner.

However, this is a methodological challenge we hope to continue working on. So far, it is not possible to develop population weights for members of the household other than the informant.

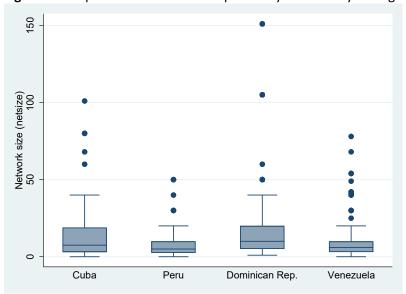
Figure 3. Magnet given to respondent to avoid repetition of households



Source: own elaboration.

Finally, it is worth making some clarifications on the variable "size of the network" captured in Table L of the questionnaire (see Annex). The contact network sizes reported by the 803 respondents of the survey (netsize variable at "RDS.dta") showed a variable magnitude. Considering that there were a number of cases that reported a network size greater than 100 contacts and that it does not seem very reasonable for a person to have an active network of such magnitude, we corrected those cases where the network size was greater than 95% of the distribution (Figure 4). In those cases, we take the maximum value of the distribution and correct for no more than one standard deviation. We also did a review of cases where the network size was unknown or its value was 0.3

Figure 4. Box plot for network size reported by community of origin



Source: own elaboration using dataset "rds.dta" from ENIR 2018.

<sup>&</sup>lt;sup>3</sup> In these cases, we replace by 1 the cases with network size zero.

## Weights

To work with the ENIR microdata you can use the RDS-II weighter, which corrects the proportions in the univariate and bivariate analysis.<sup>4</sup> The RDS II is the second of the estimators developed by (Volz and Heckathorn, 2008) and its calculation has been implemented at STATA by Schonlau, Liebau and Berlin (2012) with the incorporation of bootstrap errors and confidence intervals.<sup>5</sup> Here is a schedule for estimation at STATA<sup>6</sup> for an example of proportions of the Cuban population by sex.

```
*RDS1 - estimation using the rds_network package for STATA from Schonlau and Liebau (2012). Example for RDS.dta and PERS.dta variables (sex and commun)
```

```
> use "rds.dta"
```

- merge 1:m commun hhnum using pers
- ▶ keep if relhead==1 /\* solo informantes

To reproduce this script it is necessary to use the RDS and PERS bases and to install the "rds\_network" command. Since we have all the individuals in the household with the same number of informant rds (coupon) and referrals (ref1 to ref3)<sup>7</sup>, we will keep only the informant for this estimate, otherwise STATA will report duplicated cases for rds and ref\*.

```
rds_network sex, id(rds) coupon(ref) ncoupon(3) degree(netsize) //
ancestor(ancestor) depth(depth) recruiter_id(recruiter_id) //
recruiter var(recruiter sex)
```

<sup>&</sup>lt;sup>4</sup> So far the RDS methodology has not developed weights for multivariate analyses (Schonlau, Liebau and Berlin, 2012).

<sup>&</sup>lt;sup>5</sup> The fundamentals of the RDS-II and details of its calculation can be found in Schonlau, Liebau and Berlin (2012).

<sup>&</sup>lt;sup>6</sup> For the users of the R software it is possible to use the RDS library that includes the RDS-II estimators from Heckatron and Sequential Sampling estimator from Gile and Handcock (2010)

<sup>&</sup>lt;sup>7</sup> Users are advised that coupon numbers have three digits when dealing with seeds, with the exception of two cases in the Dominican Republic community where 5-digit coupons were assigned. The coupons of the rest of the referrals have between four and six digits, being the first one correlative to the community number (commun: 1 "Cuba", 2 "Dominican Republic", 3 "Peru", 4 "Venezuela").

Number of categories of (sex): 2 Number of seeds= 46 Greatest chain length= 25

34. 37. 41. 49. 62. 65. 71. 75. 113. 116. 133. 134. 135. 136. 140. 248. 2260. 267. 298. 304. 307. 315. 324. 377. 387. 393. 393. 394. 395. 403. 404. 406. 406. 407. 408. 409. 4	Seed 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 201 202 203 204 205 206 207 208 209 301 302 303 304 305 306 309 310 311 312 313 314 401 402 403 404	MaxDepth 12 1 5 0 3 2 4 2 5 7 8 0 0 0 0 0 4 5 10 4 2 3 8 2 1 1 5 13 3 4 0 0 0 1 0 3 2 6 10 25 1 5
444.	401	10
608.	402	25
756.	403	1

The command rds\_network determines from the informant coupon (variable rds), the size of your network and the coupons of your referrals (variables ref1, ref2 and ref3) the following information: the number of seeds and the maximum length of the strings. In turn, it allows the calculation of the size of the ancestor variable that refers to the precedent of each informant, the size of the network of contacts (degree) that in this case corresponds to the variable called netsize, the total extension of the informant's chain (depth), the id of each recruiter (recruiter\_id) and the attribute of the recruiter in the variable for which the analysis is to be made (recruiter\_sex, in this case).

rds sex if commun==1, id(recruiter\_id) degree(netsize) //
recruiter\_id(recruiter\_id) recruiter\_var(recruiter\_sex) wgt(wsex)

Observation matrix

Group1 Group2 Group1 67 17 Group2 20 17

Transition Matrix (Before Smoothing)

Group1 Group2 Group1 .79761905 .20238095 Group2 .54054054 .45945946

Demographically adjusted matrix

Group1 Group2 Group1 70.220875 17.817237 Group2 17.817237 15.144651

Data-Smoothed Recruitments

Group1 Group2 Group1 70.220875 17.817237 Group2 17.817237 15.144651

Transition Matrix

Group1 Group2 Group1 .79761905 .20238095 Group2 .54054054 .45945946

	Group1	Group2
Categories	1	2
SampleSize	96	40
Recruits	87	34
Seeds	9	6
SampleProportion	.70588235	.29411765
Equilibrium	.7275877	.2724123
AverageDegree	12.505747	8.8823528
MultiplicityDegree	3.6480565	3.8461537
Homophily	.22772601	.26750219
Weight	1.0454171	.89099885
RecruitmentComponent	1.0307492	.92620182
DegreeComponent	1.0142303	.96199211
PopulationProportion	.73794152	.26205848
VolzHeckathornProp	.72956699	.27043304

The STATA *rds* command reports a series of indicators that allow the extent to which the RDS assumptions are met and provides different estimates of proportions for the distribution of the variable of interest. In this case, it should be noted that the value of homophily is relatively low, which confirms that the assumption of random recruitment is supported.<sup>8</sup>

<sup>&</sup>lt;sup>8</sup> Only values larger than 0.9 would raise concerns (Schonlau, Liebau y Berlin, 2012).

Finally, we use the bootstrap error estimation of *svy i*n STATA incorporating as specific weighting the one obtained through *rds* package for the variable of interest (sex).

```
> svyset [pweight=wsex]
     pweight: wsex
        VCE: linearized
 Single unit: missing
    Strata 1: <one>
       SU 1: <observations>
       FPC 1: <zero>
  > svy: proportion sex
Survey: Proportion estimation
                  1
Number of strata=
                            Number of obs =
Number of PSUs =
                   136
                             Population size = 135.999999
                             Design df
                                          =
                                               135
                          Linearized
                                             Logit
                Proportion Std. Err. [95% Conf. Interval]
sex
                         .0549866 .6138666
          1
                .7354681
                                                .8294164
          2
                .2645319
                           .0549866
                                     .1705836
                                                .3861334
  ▶ bootstrap _b, reps(1000): rds sex if commun==1, id(rds) //
     recruiter id(recruiter id) degree(netsize) recruiter var(recruiter sex)
Bootstrap results
                                          Number of obs
                                                                136
                                           Replications
                                                                1,000
          Observed Bootstrap
                                                Normal based
          Coef.
                               z P>z
                                            [95% Conf. Interval]
                   Std. Err.
          .7379415 .0698837 10.56 0.000
Р1
                                              .600972
                                                         .8749111
P2
          .2620585
                    .0698837 3.75 0.000
                                               .1250889
                                                           .399028
          .729567
                     .0592375 12.32 0.000
                                               .6134636
                                                          .8456703
VH1
                     .0592375 4.57 0.000
                                               .1543297
VH2
          .270433
                                                           .3865364
```

The results presented in this estimate offer two pairs of different proportions. The first two, P1 and P2, are those adjusted by RDS-II. In this case they are both significant and their confidence interval is appropriate. The second pair of proportions, VH1 and VH2, are those adjusted by the RDS-I weighting of Volz and Heckatron (2008), and also show significant differences between males (1) and females (2) of Cuban origin.

It is worth clarifying that it is important to make these estimates for each origin since in the sampling process we start with seeds within each community of origin and at no time do we allow informants to cross refer to people outside their national community. Therefore, the sample design of the ENIR inhibits the possibility of talking about all four of them as immigrant units or about all immigrants in Montevideo.

Finally, it should be noted that the weights that can be used in this case should not have expansion properties since we do not know the real size of the population to which it could be expanded.

#### References

Coimbra, A., Goyeneche, J. J. and Zoppolo, G. (2014) *Aplicación de la estrategia de Muestreo Respondent Driven Sampling en el estudio de Población trans en Uruguay*. 14. Montevideo. Available at: http://www.iesta.edu.uy/wp-content/uploads/2015/03/dt\_RDS.pdf (Accessed: 10 October 2019).

Fossatti, L. and Uriarte, P. (2018a) *Informe Acceso a la vivienda y población migrante en Montevideo*. Montevideo. Available at:

http://www.fhuce.edu.uy/images/NEMMPO/Informe\_acceso\_a\_la\_vivienda.pdf (Accessed: 13 December 2018).

Fossatti, L. and Uriarte, P. (2018b) «Viviendo sin derecho. Migraciones latinoamericanas y acceso a la vivienda en Montevideo», *La Rivada. Investigaciones en Ciencias Sociales*, 6(11), pp. 42-60. Available at: http://www.larivada.com.ar/index.php/numero-11/articulos/190-viviendo-sin-derecho (Accessed: 24 January 2019).

Gayet, C. and Fernández-Cerdeño, A. (2009) «Time Location Sampling and Respondent Driven Sampling: techniques implementation for monitoring concentrated HIV/AIDS espideic in Mexico», in 2009 Conference of the International Union for the Scientific Study of Population. Marrakech.

Gile, K. J. and Handcock, M. S. (2010) «Respondent-Driven Sampling: An Assessment of Current Methodology», *Sociological Methodology*. SAGE Publications Inc, 40(1), pp. 285-327. doi: 10.1111/j.1467-9531.2010.01223.x.

JND (2017) La atención y tratamiento de usuarios problemáticos de cocaínas fumables en Uruguay: situación y perspectivas. Montevideo. Available at: https://www.gub.uy/junta-nacional-drogas/sites/junta-nacional-drogas/files/documentos/publicaciones/JND\_cocainas\_fumables\_web.pdf (Accessed: 10 October 2019).

Platt, L., Luthra, R. and Frere-Smith, T. (2015) «Adapting chain referral methods to sample new migrants: Possibilities and limitations», *Demographic Research*, 33(1), pp. 665-700. doi: 10.4054/DemRes.2015.33.24.

Schonlau, M., Liebau, E. and Berlin, D. (2012) *Respondent-driven sampling, The Stata Journal*. Available at: http://www.respondentdrivensampling.org. (Accessed: 16 August 2020).

Volz, E. and Heckathorn, D. (2008) «Probability based estimation theory for respondent driven sampling», *Journal of official statistics*, 24(1), pp. 79-97.

# **Appendix**

TABLE L.	Informant's n	etwork size	estimate						
	DD0 1								
Informant's	RDS number:								
		<u></u>							
	w many migrar								
	w personally?			be excluded;	number may ii	nclude friends	, spouse,		
siblings, cou	ısins, neighbors	s, and acquan	tances)				,		
From those	counted above	e, with how	many have yo	ou talked in th	ne last six mo	onths?			
From those	counted abov	e, with how	many could y	ou call in the	next 24 hour	rs?			
Among tho yourself)	se counted ab	ove, how ma	ny would be	willing to part	icipate in this	s study? (if in	vited by		
Could you	give us three r	eferences to	participate?						
	Name				Phone			RDS Number	
Referred 1:									
Referred 2:									
Referred 3:									
Relationshi	p to the perso	n who referre	ed you to par	ticipate in thi	s study?				
(choose the	closest descrip	otion)							
,	1 Spouse/partner	r							
	2 Family (specify	v):							
	3 Friend (specify	/							
	4 School classm								
	5 Friend from wo								
	6 Acquantaince f		d						
	7 Acquantaince f								
	<ul><li>8 Acquantaince f</li><li>9 Unknown perso</li></ul>								
	Other (specify)		1	1					
	Calor (Specify)	·							