

Ikarita isanzwe y'icyiciro cy'ubukene Simple Poverty Scorecard[®] Rwanda

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Uburyo butagaragara

Ikarita isanzwe y'icyiciro cy'ubukene (Simple Poverty Scorecard[®]) ikoresha ibipimo 10 by'ibiciro biri hasi byakuwe mu ibarura ku mibereho rusange y'ingo ryo muri 2010/2011 mu kwemeza urugero rw'imibereho urugo ruriho muni y'umurongo w'ubukene watanze. Abakozi bo ku isoko y'amakuru bashobora gukusanya ibisubizo mu minota nk'icumi. Amakosa n'uguhamya kw'ikarita y'icyiciro bitangazwa ku byiciro by'imirongo y'ubukene. Ikarita nshya y'icyiciro ni inzira ifatika ku miryango ifasha abakene mu Rwanda mu gupima amajanja y'ubukene, kureba impinduka mu majanja y'ubukene mu gihe, no gukata amatsinda y'abakiliya kubera serivisi ziteganyijwe.

Icyitonderwa kuri iyi nyandiko

Iyi nyandiko ikoresha amakuru yo muri 2010–2011. Isimbura iya Schreiner (2010a), ikoresha amakuru yo muri 2005–2006. Ikarita y'icyiciro nshya ishobora gukoreshwa uherye ubu. Ikarita y'icyiciro nshya n'ishaje zikoresha igisobanuro kimwe cy'*ubukene* bityo abazikoresha bashobora gukomeza gupima impinduka mu gihe bifashishije umurongo w'intangiriro kuva ku ikarita y'icyiciro ishaje no ku ikurikiranabikorwa kuva ku ikarita y'icyiciro nshya.

Gushimira

Iyi nyandiko yatewe inkunga na Private Sector Window yo muri Global Agriculture and Food Security Program na International Finance Corporation. Amakuru yakuwe mu Institut National de la Statistique du Rwanda. Turashimira Yanni Chen, Geoffrey Greenwell, Dominique Habimana, Michael McCreless, Andrew McKay, Yusuf Murangwa, Loy Nankunda, Richard Niwenshuti, Emilie Perge, na Asya Troychansky. Guhindura mu Kinyarwanda byakozwe na Emmanuel Mbitezimana na Sylvestre Ndahayo. Copyright © 2017 Mark Schreiner. All rights reserved.

Umwanditsi

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Simple Poverty Scorecard®

| | | | |
|-------------------------------|--------------------------------------|--------------------------------|-------------------------------|
| Iki ganiro irangamuntu: _____ | | <u>Izina</u> | <u>Nomero imuranga</u> |
| Itariki y'ikiganiro: _____ | Umukozi wo ku isoko y'amakuru: _____ | Ugize uruhare: _____ | _____ |
| Igihugu: <u>RWA</u> | _____ | _____ | _____ |
| Icyiciro: <u>002</u> | _____ | Aho binjirira: _____ | _____ |
| Ingano y'itsinda: _____ | _____ | Umubare w'abagize urugo: _____ | _____ |

| Igipimo | Igisubizo | Amanota Score |
|--|--|-------------------------------|
| 1. Ni abanyamuryango bangahe b'uru rugo bafite imyaka 17 kumanura? | A. Batanu cyangwa hejuru B. Bane C. Batatu D. Babiri E. Umwe F. Nta numwe | 0 2 6 11 20 29 |
| 2. Mu mezi 12 ashize, haba hari abantu hano mu rugo bakoze imirimo y'ubuhinzi-bworozi bakorera amafaranga cyangwa ikindi gihembo? (ukuyemo imirimo ya VUP) | A. Babiri cyangwa hejuru B. Umwe C. Nta mumwe | 0 3 6 |
| 3. Mu mezi 12 ashize, haba hari abantu muri uru rugo bakoze ibikorwa by'ubucuruzi bitari iby'ubuhinzi bahembwa cyangwa bikorera ku giti cyabo waba warakoze uhembwa cyangwa wikorera ku giti cyawe, nk'iduka rito cyangwa ikindi cyose cyakuzanira amafaranga? | A. Nta numwe B. Umwe C. Babiri cyangwa hejuru | 0 3 5 |
| 4. Umuntu mukuru (mu myaka) uyobora urugo/umufasha w'igitsina gore ashobora gusoma ibarwa cyangwa akandiko gato (birebana n'ururimi) cyangwa yarangije nibura umwaka wa 1 w'amashuri abanza? | A. Oya B. Yego C. Nta mugore uyobora urugo/umufasha | 0 2 4 |
| 5. Ni ibihe bikoresho by'ingenzi byubatse inkuta? | A. Rukarakara idateye isima, ibiti n'ibyondo bidateye isima, shitingi, cyangwa ibindi B. Rukarakara iteye isima, amatafari ahiye, ibiti n'ibyondo biteye isima, amabuye, bolokosima, cyangwa imbaho | 0 5 |
| 6. Ni ibihe bikoresho by'ingenzi bisakaye inzu yanyu? | A. Ibyatsi, amategura, imigano, shitingi, cyangwa ibindi B. Amabati, cyangwa beton | 0 3 |
| 7. Iyo bwije mucana iki cy'ingenzi kugira ngo mu nzu habone? | A. Umuriro w'inkwi B. Amabuye ikindi (kuyivuga), biogaz, cyangwa ibindi C. Agatadowa D. Buji, or itara rya peteroli E. Amashanyarazi, imoteri, cyangwa icyuma gikoresha imirasire y'izuba | 0 5 7 9 20 |
| 8. Urugo rwanyu rufite igitanda bungahe? | A. Ntabwo B. Bumwe C. Bubiri D. Butatu cyangwa hejuru | 0 3 5 9 |
| 9. Urugo rwanyu rufite telephone igendanwa bingahe? | A. Nta nimwe B. Imwe C. Ebyiri cyangwa hejuru | 0 5 12 |
| 10. Mu mezi 12 ashize, hari umuntu wo muri uru rugo wahinze imyaka cyangwa ibindi bihingwa bigenewe kuribwa cyangwa gucuruzwa, woroye amatungo cyangwa ibinyamababa? Niba ari yego, bafite amatungo angahe? | A. Ntibahinga B. Barahinze ariko nta matungo bafite C. Barahinze, n'itungo rimwe D. Barahinze, n'amatungo abiri cyangwa hejuru | 0 1 3 7 |

Urupapuro rw'inyuma rw'akazi: Abagize urugo n'ibyo bakora

Mu ntangiriro z'imbonerahamwe, urashyiramo gusa ibijyanye n'ikiganiro, itariki y'ikiganiro n'agace uwabazwa aherereyemo. Ubundi ushyiremo amazina na ninero by'ubazwa, n'ibyawe nk'umukarani w'ibarura, n'aho ubazwa aherereye.

Ubundi usomere ubazwa: Mwambwira amazina n'imyaka by'abantu baba muri uru rugo. Umuntu uba muri uru rugo ni umuntu cyangwa abantu, mufitanye isano cyangwa mutarifitanye, bahamaze nibura amezi 6 mu mezi 12 ashize, bateka, barya, babana mu bizima, basangiye umuntu umwe ubakuriye mu rugo, bafatikanya mu buzima bwa buri muni. Andika amazina, imyaka, n'abahari. Bashyire ku murongo uhereye ku mukuru w'umuryango, niyo yaba atariwe ubazwa. Atari mu rutonde rwawe, cyangwa adahari. Ku byawe noneho nyuma koresha imbonerahamwe ya kane, andika amazina y'umugore/bashakanye mukuru mu myaka (niba ahari). Menya neza neza niba buri muntu aba muri urwo rugo nk'uko amabwiriza abivuga "Amabwiriza yo kuzuzanya ibirango byo mu mbonerahamwe". Abara ababa mu rugo, noneho wandike igiteranyo cyabo hejuru mu mbonerahamwe handitse "umubare w'ababa mu rugo b'urugo". Menya umuntu uba mu rugo ufite imyaka 17 cyangwa muni, ubabare, ubundi uce uriziga ku gisubizo ku kirango kiri mu mbonerahamwe.

Kuri buri muntu uba mu rugo ufite nibura kuva ku myaka 6 baza: Mu mezi 12 ashize, <amazina> hari igikorwa cy'ubuhinzi wigeze ukora (yaba ubuhinzi, ubworozi, uburobyi cyangwa se ibyamashyamba) uhabwa umushara, umubyizi cyangwa se ubundi bwishyu? Mubaze na none: Mu mezi 12 ashize, <amazina> hari igikorwa cy'ubucuruzi cyitari icy'ubuhinzi waba warakoze uhembwa cyangwa wikorera ku giti cyawe, nk'iduka rito cyangwa ikindi cyose cyakuzanira amafaranga, shyira uruziga ku kiranga cya kabiri na gatatu mu mbonerahamwe.

Ubahiriza amabwiriza ari muri "Amabwiriza yo kuzuzanya ibirango byo mu mbonerahamwe".

| Amazina | Imyaka | Kuba yari ahari amezi 6 mu mezi 12 ashize? | <amazina> aba mu rugo? (ukurikije amabwiriza) | <amazina> aba mu rugo afite imyaka 17 cyangwa kumanura? | Niba <amazina> afite imyaka 6 kuzamura, ubundi mu mezi 12 ashize yaba . . . | |
|-----------------|--------|--|---|--|--|---|
| | | | | | Hari igikorwa cy'ubuhinzi (ubuhinzi, ubworozi, uburobyi cyangwa se ibyamashyamba) yaba yarakoze yishyurwa? | Hari igikorwa cy'ubucuruzi kitari icy'ubuhinzi yaba yarigeze akora ahembwa cyanga yikorera? |
| 1. | | Oya Yego | Oya Yego | Ntaba mu rugo; Afite muni ya 17; Afite hejuru cyangwa 17 | Umuntu uba mu rugo, afite hejuru yi 6; Oya Yego | Oya Yego |
| 2. | | Oya Yego | Oya Yego | Ntaba mu rugo; Afite muni ya 17; Afite hejuru cyangwa 17 | Umuntu uba mu rugo, afite hejuru yi 6; Oya Yego | Oya Yego |
| 3. | | Oya Yego | Oya Yego | Ntaba mu rugo; Afite muni ya 17; Afite hejuru cyangwa 17 | Umuntu uba mu rugo, afite hejuru yi 6; Oya Yego | Oya Yego |
| 4. | | Oya Yego | Oya Yego | Ntaba mu rugo; Afite muni ya 17; Afite hejuru cyangwa 17 | Umuntu uba mu rugo, afite hejuru yi 6; Oya Yego | Oya Yego |
| 5. | | Oya Yego | Oya Yego | Ntaba mu rugo; Afite muni ya 17; Afite hejuru cyangwa 17 | Umuntu uba mu rugo, afite hejuru yi 6; Oya Yego | Oya Yego |
| 6. | | Oya Yego | Oya Yego | Ntaba mu rugo; Afite muni ya 17; Afite hejuru cyangwa 17 | Umuntu uba mu rugo, afite hejuru yi 6; Oya Yego | Oya Yego |
| 7. | | Oya Yego | Oya Yego | Ntaba mu rugo; Afite muni ya 17; Afite hejuru cyangwa 17 | Umuntu uba mu rugo, afite hejuru yi 6; Oya Yego | Oya Yego |
| 8. | | Oya Yego | Oya Yego | Ntaba mu rugo; Afite muni ya 17; Afite hejuru cyangwa 17 | Umuntu uba mu rugo, afite hejuru yi 6; Oya Yego | Oya Yego |
| 9. | | Oya Yego | Oya Yego | Ntaba mu rugo; Afite muni ya 17; Afite hejuru cyangwa 17 | Umuntu uba mu rugo, afite hejuru yi 6; Oya Yego | Oya Yego |
| 10. | | Oya Yego | Oya Yego | Ntaba mu rugo; Afite muni ya 17; Afite hejuru cyangwa 17 | Umuntu uba mu rugo, afite hejuru yi 6; Oya Yego | Oya Yego |
| 11. | | Oya Yego | Oya Yego | Ntaba mu rugo; Afite muni ya 17; Afite hejuru cyangwa 17 | Umuntu uba mu rugo, afite hejuru yi 6; Oya Yego | Oya Yego |
| Abanyamuryango: | | Umubare yego: | | Umubare hejuru cyangwa 17: | Umubare yego: | Umubare yego: |

**Imbonerahamwe yifashishwa ngo ibyiciro bibarwe
mu ngero ubukene buriho:
Imirongo y'igihugu y'ubukene**

| Score | Urugero ubukene bwagaragayeho (%) | | | | |
|--------|-----------------------------------|------|-------|-------|---|
| | Ku rwego rw'igihugu | | | | Icya kabiri gikennye cyane muni y'100% ry'umurongo w'igihugu |
| | Ibiribwa | 100% | 150% | 200% | |
| 0-4 | 98.3 | 99.5 | 100.0 | 100.0 | 98.2 |
| 5-9 | 77.2 | 93.4 | 98.1 | 99.2 | 75.6 |
| 10-14 | 72.0 | 90.3 | 97.7 | 99.1 | 69.7 |
| 15-19 | 57.3 | 83.2 | 95.6 | 98.3 | 56.3 |
| 20-24 | 38.7 | 71.2 | 91.0 | 96.9 | 38.6 |
| 25-29 | 28.8 | 63.0 | 90.6 | 96.1 | 28.3 |
| 30-34 | 19.3 | 50.2 | 83.0 | 94.4 | 18.2 |
| 35-39 | 14.0 | 34.7 | 70.5 | 87.1 | 12.6 |
| 40-44 | 9.2 | 27.7 | 58.4 | 78.9 | 6.5 |
| 45-49 | 5.0 | 17.0 | 45.1 | 67.8 | 3.4 |
| 50-54 | 2.7 | 11.0 | 30.5 | 56.3 | 2.0 |
| 55-59 | 0.6 | 6.0 | 25.4 | 42.8 | 0.5 |
| 60-64 | 0.4 | 2.0 | 14.0 | 27.8 | 0.0 |
| 65-69 | 0.2 | 0.9 | 7.3 | 18.6 | 0.0 |
| 70-74 | 0.0 | 0.0 | 3.6 | 9.9 | 0.0 |
| 75-79 | 0.0 | 0.0 | 1.3 | 7.2 | 0.0 |
| 80-84 | 0.0 | 0.0 | 0.5 | 4.9 | 0.0 |
| 85-89 | 0.0 | 0.0 | 0.4 | 1.0 | 0.0 |
| 90-94 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 95-100 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

**Imbonerahamwe yifashishwa ngo ibyiciro bibarwe
mu ngero ubukene buriho:
Imirongo PPP 2005 ku isi**

| Score | Urugero ubukene bwagaragayeho (%) | | | | |
|--------|---|--------|--------|--------|--------|
| | Igipimo cy'ubwiyongere bw'ubukungu 2005 | | | | |
| | \$1.25 | \$2.00 | \$2.50 | \$5.00 | \$8.44 |
| 0-4 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 5-9 | 97.5 | 99.2 | 99.8 | 100.0 | 100.0 |
| 10-14 | 96.7 | 99.1 | 99.7 | 100.0 | 100.0 |
| 15-19 | 94.3 | 98.6 | 99.6 | 100.0 | 100.0 |
| 20-24 | 88.2 | 97.4 | 99.1 | 100.0 | 100.0 |
| 25-29 | 85.1 | 96.9 | 98.7 | 99.9 | 100.0 |
| 30-34 | 76.6 | 95.9 | 98.3 | 99.9 | 100.0 |
| 35-39 | 60.4 | 90.6 | 95.7 | 99.9 | 100.0 |
| 40-44 | 50.8 | 83.3 | 91.2 | 99.5 | 99.9 |
| 45-49 | 36.4 | 73.2 | 85.2 | 98.5 | 99.9 |
| 50-54 | 21.2 | 61.5 | 77.2 | 95.7 | 99.9 |
| 55-59 | 17.4 | 46.6 | 61.0 | 90.4 | 98.6 |
| 60-64 | 7.7 | 31.1 | 44.4 | 80.2 | 94.8 |
| 65-69 | 3.4 | 17.7 | 28.0 | 69.4 | 86.2 |
| 70-74 | 1.8 | 10.1 | 18.2 | 55.6 | 74.3 |
| 75-79 | 0.2 | 8.2 | 14.8 | 50.8 | 65.7 |
| 80-84 | 0.2 | 2.1 | 8.7 | 28.2 | 58.1 |
| 85-89 | 0.2 | 0.6 | 2.4 | 16.8 | 45.6 |
| 90-94 | 0.0 | 0.0 | 0.0 | 10.9 | 45.6 |
| 95-100 | 0.0 | 0.0 | 0.0 | 0.0 | 45.6 |

**Icyitonderwa mu gupima impinduka
mu majanisha y’ubukene
mu gihe hifashishijwe ikarita y’icyiciro
ishaje ya 2005–2006 n’inshya ya 2010–2011**

Iyi nyandiko ikoresha amakuru yakuwe mu ibarura ku mibereho y’ingo (Enquête Intégrale sur les Conditions de Vie des Ménages, EICV) ryo mu Rwanda muri 2010–2011. Isimbura iya Schreiner (2010a), ikoresha amakuru yakuwe muri EICV ya 2005–2006. Simple Poverty Scorecard[®] mu 2010–2011 nshya hano ishobora gukoreshwa uherye ubu.

Gahunda zimwe na zimwe zifasha abakene mu Rwanda bamaze gukoresha ikarita y’icyiciro isaje ya 2005–2006. Yewe nanyuma yo kugereranya ku ikarita y’icyiciro nshya ya 2010–2011, aba bayikoresha bashobora gukomeza kwemeza impinduka mu majanisha y’ubukene bifashishije ibyemejwe ku murongo uriho w’intangiriro byakuwe ku ikarita y’icyiciro ishaje ya 2005–2006 n’n’ibyemejwe ku ikurikiranabikorwa byakuwe ku ikarita y’icyiciro nshya ya 2010–2011. Ibi birashoboka kubera ko amakarita y’icyiciro yomi inshya n’ishaje yahuriye ku gisobanuro kimwe cy’ubukene. Ku murongo w’ubukene watanzwe uri ku makarita yombi, ibyemejwe ku mpinduka bishobora kuboneka nk’itandukaniro hagati y’amajanisha y’ubukene yemejwe yakuwe ku gipimo cy’umurongo w’intangiriro hifashishijwe ikarita y’icyiciro ishaje ya 2005/2006 n’ayakuwe ku gipimo cy’ikurikiranabikorwa hifashishijwe ikarita y’icyiciro nshya ya 2010–2011.

Byose hamwe, abakoyiresheje bwa mbere n’abasanze bayikoresha bese bashobora gukoresha ikarita y’icyiciro nshya ya 2010–2011 kuva ubu. Turebye imbere, ibi bituma habaho umurongo mwiza w’intangiriro. Dusubije amaso inyuma, abasanze bakoresha Simple Poverty Scorecard[®] ishaje bashobora gukomeza gukoresha ibyemejwe bisanzwe mu gihe bapima impinduka.

Ikarita y'icyiciro cy'ubukene busanzwe Rwanda

1. Iriburiro

Iyi nyandiko iragaragaza ikarita y'icyiciro cy'ubukene busanzwe. Imiryango ifasha abakene mu Rwanda ishobora kuyikoresha mu kwemeza urugero rw'imibereho urugo ruriho munsu y'umurongo w'ubukene watanzwe, mu gupima ijanisha ry'ubukene ku matsinda mu gihe runaka, no gutoranya itsinda ry'abakiliya ryahabwa serivisi yateganyijwe.

Ikarita nshya y'icyiciro aha ikoresha amakuru yavuye mu ibarura ryabaye mu myaka ya 2010–2011 ku mibereho y'ingo mu Rwanda (EICV); ikaba isimbuye ikarita ishaje ivugwa na Schreiner (2010a) yakoreshaga amakuru ya EICV yakozwe muri 2005–2006. Ikarita nshya y'icyiciro mu myaka ya 2010–2011 niyo ifite ireme, akaba ari yo mpamvu uherye none ariyo yonyine izajya ikoreshwa. Kubera ko ikarita nshya n'ishaje zose zihuriza ku kintu kimwe aricyo *ubukene*, abari basanzwe bakoresha ikarita ishaje yo muri 2005–2006 bashobora gukomeza kwemeza impinduka mu majanisha y'ubukene mu bihe bakoresha umurongo ngenderwaho ku ikarita yo muri 2005–2006 n'ikurukiranabikorwa ku ikarita nshya yo muri 2010–2011.

Uburyo buziguye bwo gupima ubukene hakoreshejwe ibarura ku mibereho riraruhije kandi rirahenze. Nk'icyitegererezo, EICV yo mu myaka ya 2010–2011 mu Rwanda ifite impapuro 78 kandi ikubiyemo amagana y'ibikoresho, byinshi muri byo bishobora kuba byarabajijwe inshuro nyinshi (urugero, kuri buri muntu mu bagize urugo, kuri buri murima uhingwa, cyangwa kuri buri kiribwa). Nk'uko Ikigo cy'igihugu gishinzwe ibaririshamibare mu Rwanda kibivuga (Ikigo cy'igihugu gishinzwe ibarurishamibare mu Rwanda, 2012, urup. 31), uhejuru yasuye buri rugo rwatoranyijwe inshuro 10 mu minsi 20 kugera kuri 30.

Tugereranyije, uburyo butaziguye mu gupima ubukene buroroshye, burihuta kandi buraciriritse. Bukoresha ibipimo by'igenzura 10 (nko kubaza ngo “Ni ibihe bikoresho by'ingenzi bisakaye inzu yanyu?” na “Urugo rwanyu rufite igitanda bungahe?”) kugira ngo bubone ikarita ihuye cyane n'icyiciro cy'ubukene nk'uko byapimwe n'ibarura ryose rya EICV.

Ikarita isanzwe y'icyiciro cy'ubukene itandukanye n'uburyo bwa “*proxy-means tests*” (Coady, Grosh, na Hoddinott, 2004) bugaragaramo gukoresha umucyo, bukoreka,¹ kandi bujyana n'ubushobozi ndetse n'intego, bitari ibya Leta z'ibihugu ahubwo by'imiryango ifasha abakene, mu turere. Uburyo bwo gupima ubukene bushoboka imiryango ikorera mu turere ntiburemereye mu cyegeranyo (nk'amabwiriza ashingiye ku mutungo w'ubutaka cyangwa imiterere y'inzu) cyangwa ngo bugendere ku muntu umwe

¹ Nyamara, ikarita y'icyiciro y'ubukene si iyo mu rwego rwa Leta. Uburenganzira bw'umwanditsi ku Rwanda bufitwe n'umuterankunga na Microfinance Risk Management, L.L.C.

no ku kintu kimwe (nk’uruhare rw’abakozi bazobereye gukorera aho ibintu bibera mu rwego rw’ubukungu. Ibipimo by’ubukene bivuye muri ubu buryo bishobora guhenda, ireme ryabyo ntirizwi, ntibyagereranywa hagati y’ahantu, y’imiryango, yewe n’ibihe.

Ibipimo by’ubukene bishobora gukoreshwa mu gupima uruhare by’abagenerwabikorwa ba gahunda bari muni y’umurongo w’ubukene runaka, urugero, umurongo w’idolari 1.25 ku muni ugaragara mu Ntego z’iterambere ry’ikinyagihumbi kuri PPP 2005.

Abafatanyabikorwa bato b’umuryango USAID mu Rwanda bashobora gukoresha PPP 2005 y’umurongo w’igipimo cy’idolari 1.25 ku muni mu gukora raporo igaragaza umubare w’abagenerwabikorwa babo “bakennye cyane”.²

Igipimo gishobora nanone gukoreshwa igikorwa nyir’izina ku murongo w’ubukene ugendeye ku gihe. Muri iyi mikorere yose, ikarita y’icyiciro cy’ubukene iba igikoresho nyacyo gifite ireme rizwi gishingiye ku ikoreshwa ry’ibintu. Mu gihe ibarura ku mibereho rihenze cyane yewe no kuri za Leta, imiryango imwe n’imwe ifasha abakene ishobora gukora ikarita y’icyiciro ihendutse ifasha mu gusuzuma ishyirwa mu bikorwa ku bukene no (niba bikenewe) gushyira abakiliya mu matsinda bitewe na serivisi iteganyijwe.

² USAID isobanura ko urugo rukennye cyane iyo ibikenerwa rukoresha ku muni, ku muntu biri muni y’umurongo wo hejuru w’idolari 1.25 ku muni—ku cyegeranyo cy’amafaranga 480 mu Rwanda muri risange kuva mu Gushyirwa 2010 kugeza mu Kawakira 2011—cyangwa (RWF246) umurongo ugaragaza kimwe cya kabiri cy’abakene cyane bari muni y’100% ry’umurongo w’igihugu. USAID (2014, p. 8) yemeje ikarita y’icyiciro y’ubukene busanzwe (igaragazwa nka Progress Out of Poverty Index[®]) ku ikoreshwa n’abafatanyabikorwa bayo bato.

Uburyo bw'ibarurishamibare hano bugamije kumvikana ku bantu batari inzobere. Uko biri kose, niba abayobozi bariho kugira ngo bafate igipimo cy'ubukene ku bwabo banagikoreshe batangaza ibyemezo byabo, bagombye kubanza kwizera ko gikora. Gukorera mu mucyo no kwiyoroshya byubaka icyizere. Kwakira ibijyanye na “*buy-in*”; uburyo bwa “*proxy-means tests*” n'igabanuka “ry'ibiranga ubukene” byabayeho mu myaka nka 30, ariko byakoreshejwe gake cyane mu kumenyekanisha ibyemezo kw'imiryango ifasha abakene mu turere. Ibi si uko bidatanga umusaruro, ahubwo ni uko akenshi bigaragazwa (iyo bigaragajwe muri byose) mu buryo bw'imbonerahamwe y'igabanuka ikaba itumvikana ku bantu batari inzobere (hamwe n'amazina y'ibipimo biruhije isobanura nka “LGHHSZ_2”) hamwe n'imibare irutwa na zero na henshi hari imibare y'ibice. Ku bw'igikorwa gitaka ibiteganywa kizwi nka “*flat maximum*”, uburyo bw'amanota ku miterere bworoshye, bugendeye mu mucyo bushobora kwenda kuba busobanutse kandi bukora ku bintu binyuranye, bumwe bw'umucyo (Schreiner, 2012a; Caire na Schreiner, 2012).

Hanze yo koroha no gukorera mu mucyo, uburyo bw'imikorere y'ikarita y'icyiciro cy'ubukene bunahanga udushya mu buryo bwo guhuza amanota n'uburyo ubukene bwigomba ahantu, mu ngano yireme mu masuzuma yabwo, no mu buryo bukomora inzira k'ukwibeshya gusanze. N'ubwo amasuzuma y'ukuri yoroshye kandi yihuta mu bikorwa by'ibarurishamibare no mu rwego rwo kurangamira inyungu mu gupima ingorane zishobora kubaho mu nguzanyo, yakoreshejwe gacye cyane mu gupima icyiciro cy'ubukene.

Ikarita y'icyiciro ishingira ku makuru aturuka mu Kigo cy'igihugu gishinzwe ibarurishamibare kuri EICV mu myaka ya 2010–2011. Iyipimo byatoranyijwe kugira ngo bibe:

- Bidahenze gukusanywa, byoroshye gusubizwa vuba, kandi byoroshye gusuzumwa
- Byerekeye cyane ku bukene
- Byahinduka bikajyana n'igihe ubukene buramutse buhinduye isura
- Byakoreshwa mu turere twose tw'u Rwanda

Amanota yose yo ku ikarita y'icyiciro ni imibare ishyitse kandi umwitangirizwa wayo uri hagati ya 0 (aho bishoboka cyane muni y'umurongo w'ubukene) n'ijana (bishoboka buhoro muni y'umurongo w'ubukene). Abatari inzobere bashobora gukusanya amakuru bakagaragaza amanota ku rupapuro bakiri ku isoko y'amakuru mu gihe cy'iminota nk'icumi.

Icyiciro cy'ubukene gishobora gukoreshwa mu kwemeza ingano shingiro z'ubwoko butatu. Bwa mbere, ashobora kugereranya ubukene buriho ku rugo, ibyo bikaba, ibishoboka ko imibereho y'urugo ku muntu mukuru cyangwa ku muturage iri muni y'umurongo w'ubukene watanzwe.

Bwa kabiri, amanota y'icyiciro cy'ubukene ashobora kwemeza amajanja y'ubukene bw'itsinda ry'ingo mu gihe runaka. Iri gereranya ni icyegeranyo cy'ubukene bwemejwe mu itsinda.

Bwa gatatu, amanota kucyiciro cy'ubukene ashobora kwemeza impinduka mu ijanisha cy'ubukene ku itsinda ry'ingo (cyangwa ku ngo ebyiri zatoranyijwe bisanzwe, zombi zifite umubare ungana w'abazibamo mu bihe bibiri). Ku ngo ziri mu itsinda 1

cyangwa menshi, iri yemeza ni icyegeranyo cy'ikurikiranabikorwa ku bukene bwemejwe n'icyegeranyo cy'umurongo w'intangiriro wemejwe (Schreiner, 2015a).

Amanota ku bukene ashobora na none gukoreshwa mu gushyira abagenerwabikorwa mu matsinda kuri serivisi iteganyijwe. Mu rwego rwo gufasha abayobozi guhitamo umurongo ntarengwa nyawo mu irasantego ku ntego zabo, iyi nyandiko iratanga raporo ku buryo bwinshi bwo kutoranya amatsinda y'inyigo nyir'izina akenewe.

Iyi nyandiko iragaragaza ikarita rukumbi y'icyiciro ifite ibipimo kandi ishingira ku ngingo zavuye mu makuru ya EICV mu myaka ya 2010/2011. Amanota yakuwe muri iyi karita y'icyiciro yashyizwe mu byiciro hakurikijwe ingano ubukene burho ku mirongo 10 y'ubukene, ine muri yo nayo ihabwa ingufu n'ikarita y'icyiciro yo mu myaka ya 2009–2010.

Ikarita nshya y'icyiciro yubatswe hakoreshejwe amakuru ya EICV ya 2010–2011. Icyo gice cy'amakuru kandi cyakoreshejwe mu guhuza amanota n'ubukene buriho. Ikindi gice cy'amanota cyakoreshejwe mu kugena agaciro k'ireme ry'ikarita y'icyiciro ku kwemeza urugero ubukene buriho mu ngo, kwemeza amajanisha y'ubukene mu matsinda mu gihe iki n'iki no mu gukata amatsinda y'abakiliya.³

³ Ibipimo byinshi by'ikarita y'icyiciro cyangwa ibisubizo bishoboka biratandukanye hagati ya 2005/6 na 2010/111 muri EICV. Ibi ntibirimo ipima ry'ireme ry'impinduka zemejwe mu gihe runaka hakoreshwa ikarita y'icyiciro nshya ya 2010/11 ku makuru y'ikarita ya 2005/6.

Ibi bigereranyo ku manota byose uko ari bitatu (urugero rw'ubukene ku rugo, ijanisha ry'ubukene ku ngo mu gihe runaka, n'impinduka ku ijanisha ry'ubukene ku ngo mu gihe runaka) bifite ukuri. Ibi ni uko, mu cyegeranyo bihuye n'umubare nyakuri ku ibaza ryongeye kubaho mu batoranyijwe mu gihe byakorwaga biturutse ku (kandi bigakorerwa ku) bantu rukumbi, badahinduka aho isano hagati y'ibipimo by'ikarita y'icyiciro n'ubukene bidahinduka. Kimwe n'indi mikorere yose yatekerejweho, ikarita y'icyiciro hano yakozwe uhereye ku itsinda rimwe rukumbi hanyuma habura ikimenyetso mu gihe cyo gukoresha irindi tsinda (muri iyi nyandiko) ngo hatangwe agaciro. Byongeye kandi, birafutanye mu buryo bumwe butazwi mu gihe bukoreshejwe (mu ngiro) ku bantu batandukanye cyangwa bukoreshejwe nyuma ya 2010/11.⁴

Mbese, mu gihe uburyo butaziguye bwo gushyira mu byiciro buhendutse ugereranyije n'uburyo buziguye bwo gukora ibarura, ni nako bugira amakosa iyo bushyizwe mu ngiro. (Uburyo bw'ibarura bugira ukuri mu gisobanuro cyabwo). Hagaragara amakosa kubera ko ikarita y'icyiciro iteganya ko uko byagenda kose isano y'ubutaha hagati y'ibipimo n'ubukene mu matsinda ashoboka yose izaba imwe na ya yindi igihe amakuru yakorwaga.

⁴ Ingero z'ingenzi zirimo amatsinda y'inyigo ahagarariye igihugu mu gihe runaka kiri imbere cyangwa amatsinda mato adahagarariye igihugu cyose (Diamond n'abo bafatanyije 2014; Tarozzi na Deaton, 2009).

Birumvikana, iki gisubizo giteganywa nta kabuza mu buryo bw'imikorere butekerezwa gifite ireme igice.

Mu cyegeranyo cya *bootstraps* 1000 za $n = 16,384$ zikuwe mu matsinda ahesha agaciro, ikinyuranyo hagati y'ibyemejwe ku ikarita ku ijanisha ry'ubukene bw'itsinda n'ijanisha nyakuri mu gihe runaka ku 100 ku ijana ry'umurongo w'igihugu ni ijanisha ry'amanota 0.4. Mu mirongo 10 yose y'ubukene, icyegeranyo gisesuye cy'ikinyuranyo ni hafi ijanisha ry'amanota 1.1 naho ikinyuranyo gisesuye cyo hejuru ni ijanisha ry'amanota 2.2. Ibi binyuranyo biranga ikoreshwa ry'amatsinda atandukanye, ntibiranga amakosa; ikinyuranyo ku cyegeranyo cyagombye kuba zeru iyo ibarura EICV mu myaka ya 2010–2011 riza kuba ryarasubiwemo kandi rikabanza gukata mu duce duto ingo ryakoreweho, rigakorwa neza mu buryo busa n'ubwakoreshwe mu gukora no guha agaciro ikarita y'icyiciro.

90 ku ijana by'ikizere kuri $n = 16,384$ ni ijanisha ry'amanota ± 0.8 cyangwa make kuri yo. Kuri $n = 1,024$, 90 ku ijana by'ikizere ni ijanisha ry'amanota ± 0.3 cyangwa make kuri yo.

Igice cya 2 kiri muni kiratanga inyandiko ku makuru n'umurongo w'ubukene. Ibice bya 3 na 4 birasobanura uburyo bwo gukora ikarita y'icyiciro no gutanga imirongo ngenderwaho mu gihe cyo gushyira mu ngiro. Igice cya 5 n'icya 6 biravugaga uburyo. Hemezwa urugero ubukene buriho mu ngo n'amajanja y'ubukene mu matsinda mu gihe runaka. Igice cya 8 kivugaga irasantego. Igice cya 9 kirashyira ikarita y'icyiciro hano ku rwego rwo kuyisanisha n'umwitozo wo ku Rwanda. Igice cya nyuma ni inshamake.

“Amabwiriza yo gukoresha ibirango byo mu mbonerahamwe” iravugaga uburyo bwo kubaza ibibazo (n'uburyo bwo gusobanura ibisubizo) mu buryo bwo kwigana imikorere y'Ikigo cy'igihugu gishinzwe ibarurishamibare mu Rwanda ku buryo bwa hafi. Iyi “mirongo ngenderwaho” (“hamwe n'urupapuro rw'inyuma”) byateruwe neza nta tandukaniro n'ibiri mu ikarita y'icyiciro cy'ubukene busanzwe.

2. Amakuru n'ibisobanuro by'icyiciro cy'ubukene

Iki gice kiganira ku makuru yakoreshejwe mu kubaka no guha agaciro ikarita y'icyiciro cy'ubukene busanzwe. Ni inyandiko kandi ku mirongo 10 y'ubukene ishingirwaho amanota atangwa.

2.1 Amakuru

Ikarita nshya y'icyiciro ishingira kungu 14,308 zabaruwe na EICV mu myaka ya 2010–2011. Iri ni ibarura rya vuba cyane rirebana n'imibereho.

Ku ntego zo gupima ubukene, muri EICV mu myaka ya 2010–2011 ingo zagabanyijwemo na none uduce tubiri hakoreshejwe tombola:

- Gukora no guhuza mu gutoranya ibipimo n'amanota ndetse no guhuza amanota n'urugero ubukene buriho
- Guha agaciro ipima ry'ibiri ukuri hakoreshejwe amakuru atakoreshejwe ku gukora no guhuza

Imirimo ku isoko y'amakuru muri EICV mu myaka ya 2010–2011 yaturutse mu kwezi k'Ugushyingo 2010 kugeza m'Ukwakira 2011. Imibereho yapimwe mu mafaranga y'u Rwanda ku biciro mu cyegeranyo mu gihugu mu kazi karorewe ku isoko y'amakuru.

2.2 Amajanja y'ubukene ku rugo, ku muntu cyangwa ku mugenerwabikorwa

Ijanisha ry'ubukene ni umugabane w'ingero fatizo mu ngo, aho imibereho (ugabanyije n'umubare ungana w'abantu bakuru baba mu rugo cyangwa w'ababa mu rugo bose) iri muni y'umurongo w'ubukene watanze. Urugero fatizo mu gusesengura ni urugo ubwarwo cyangwa umuntu mu rugo. Buri muntu mu rugo ni umukene ku rugero (cyangwa agereranywa ku bukene buriho) rumwe n'abandi baba mu rugo.

Mu kubigaragaza, dufate ko gahunda ireba ingo ebyiri. Urugo rwa mbere rurakennye (imibereho ingana ku muntu mukuru cyangwa ku muturage iri muni y'umurongo w'ubukene watanze), kandi rubabwamo n'abantu batatu, umwe muri bo ni umugenerwabikorwa wa gahunda. Urugo rwa kabiri ntirukennye kandi rubamo n'abantu bane, babiri muri bo ni abagenerwabikorwa ba gahunda.

Ijanisha ry'ubukene ribarirwa ku ngo cyangwa ku bantu. Niba gahunda isobanura *abagenerwabikorwa* bayo nk'ingo, aha urwego urugo ruriho rurakwiye. Urwego urugo rwemejweho mu bukene ni urugero rw'icyiciro cy'ubukene mu cyegeranyo (cyangwa ukwemezwa ku bukene) hagati y'ingo n'abagenerwabikorwa ba gahunda.⁵

Muri uru rugero, iki ni $\frac{1 \cdot 1 + 1 \cdot 0}{1 + 1} = \frac{1}{2} = 0.5 = 50$ ku ijana. Muri "1·1" hejuru, bivuze

ko "1" rya mbere ni ingano y'urugo rwa mbere, hanyuma "1" rya kabiri ni icyiciro cy'ubukene bw'urugo (rukennye). Muri "1·0" hejuru "1" ni ingano y'urugo rwa kabiri, naho "0" ni urugero rw'ubukene bw'urugo rwa kabiri (rudakennye). "1 + 1" bigaragara

⁵ Izi ngero ziragenekereza gukora amatsinda y'inyigo mu buryo bwa tombola isanzwe ku ngo.

ku cyita rusange ni igiteranyo cy'ingano y'ingo ebyiri. Buri rugo rufite ingano ya (1) kubera ko urugero fatizo rw'isesengura ari urugo.

Mu bundi buryo, icyegeranyo cy'urwego umuntu ariho ruba ruhagije iyo gahunda isobanura abantu bose baba mu rugo bagerwaho na serivisi zayo

nk'abagenerwabikorwa. Muri uru rugero, ikigereranyo cy'urwego rw'umuntu ni

icyegeranyo ku ngano y'umuryango ku miterere y'ubukene ku rugo rufite

abagenerwabikorwa, cyangwa $\frac{3 \cdot 1 + 4 \cdot 0}{3 + 4} = \frac{3}{7} = 0.43 = 43$ ku ijana. Muri "3·1" hejuru,

"3" ni ingano y'urugo y'urugo rwa mbere kubera ko rubamo abantu batatu, naho "1" ni

icyiciro cy'ubukene bwawo (rukennye). Muri "4·0" hejuru ni ukuvuga ko "4" ari ingano

y'urugo rwa kabiri kuko rubamo abantu 4, hanyuma "0" ikaba icyiciro cy'ubukene

bwarwo (ntirukennye). "3 + 4" hejuru ni igiteranyo cy'ingano y'izo ngo ebyiri. Ingano

y'urugo ni umubare w'abantu barubamo kubera ko urugero fatizo rw'isesengura ari

umuntu uba mu rugo.

Nk'urugero rwa nyuma, gahunda ishobora gufata nk'abagenerwabikorwa bayo

abo bantu baba mu rugo bonyine ikorana nabo ku buryo buziguye. Kuri uru rugero, ibi

bivuze ko ababa mu ngo bamwe na bamwe, ariko atari bose babarwa. Icyegeranyo ku

rwego rw'umuntu aha ni icyegeranyo cy'ingano y'abagenerwabikorwa ku miterere

y'ubukene mu ngo zibamo abagenerwabikorwa, cyangwa

$\frac{1 \cdot 1 + 2 \cdot 0}{1 + 2} = \frac{1}{3} = 0.33 = 33$ ku ijana. "1" rya mbere muri "1·1" rivuze hejuru ingano

y'urugo rwa mbere kubera ko rubamo umuntu umwe, naho "1" ya kabiri ikaba icyiciro

cy'ubukene muri urwo rugo (rukennye). Muri "2·0" hejuru, "2" ni ingano y'urugo rwa kabiri kuko rubamo abagenerwabikorwa 2 naho "0" ikaba imiterere yarwo y'ubukene (rudakennye). "1 + 2" ku cyita rusange ni igiteranyo cy'ingano y'ingo uko ari ebyiri. Ingano ya buri rugo ni umubare w'abagenerwabikorwa barubamo kubera ko urugero fatizo rw'isesengura ari umugenerwabikorwa.

Byose bisobanuriwe hamwe, ibyegeeranyo ku ijanisha ry'ubukene ni ingano y'ibyegeeranyo ku miterere y'ubukene bw'urugo (cyangwa ijanisha ubukene buriho), aho ingano ari umubare w'ingero fatizo nyazo mu rugo. Mu gukora raporo, imiryango ishobora gusobanura neza urugero fatizo rw'isesengura arirwo—urugo, umuntu uba mu rugo, cyangwa umugenerwabikorwa—kandi agasobanura impamvu urwo rugero fatizo ari rwo koko.

Ishusho ya 1 iragaragaza umurongo w'ubukene n'ijanisha ry'ubukene ku ngo no ku bantu mu ibarura EICV mu myaka ya 2010/11 ku Rwanda nk'igihugu no mu gusuzuma no guha agaciro amatsinda mato y'inyigo.

Ishusho ya 2 iragaragaza imirongo y'ubukene n'ijanisha ry'ubukene ku rwego rw'igihugu no ku rwego rw'intara 5 buri yose. Ijanisha ry'ubukene ku rugo rigaragazwa kubera ko—nk'uko byagaragajwe hejuru—urugero rw'ubukene ku rugo bushobora guhindurwa ijanisha ry'ubukene ku zindi ngero fatizo z'isesengura. Iyi kandi ni yo mpamvu ikarita y'icyiciro cy'ubukene busanzwe ikorwa, ishyirwa ku nzego no guhabwa agaciro hifashishijwe ingano y'ingo. Ijanisha ry'ubukene ku muntu na none riri ku

mashusho ya 1 n'ya 2 kubera ko ibi ari ibyegeranyo byatanzwe na Leta y'u Rwanda no kuba ibyegeranyo ku muntu akenshi bikoreshwa muri politiki z'ibiganiro.

Mu ishusho ya 1, ijanisha ry'ubukene ku banyarwanda ku 100 ku ijana ry'umurongo w'ubukene mu gihugu ni 44.9 ku ijana, hanyuma icyegeranyo ku muntu ku murongo w'ibiribwa kikaba 24.1 ku ijana. Ibi bishushanyo bibiri bihuye n'ibyo mu Kigo cy'igihugu cy'ibarurishamibare mu Rwanda (2012, urup. 5).

2.3 Igisobanuro cy'ubukene

Ubukene ni gihe urugo rukennye cyangwa rudakennye. Mu Rwanda, ibi bigaragazwa n'uko imibereho mu ngo ku bantu bakuru cyangwa ku muturage muri rusange iri hasi y'umurongo w'ubukene watanzwe. Mbese igisobanuro cy'*ubukene* cyumvikana mu buryo bubiri: ipima ry'imibereho ku ngo, n'umurongo w'ubukene.

Igisobanuro cy'*ubukene* mu myaka ya 2005–2006 ni kimwe n'icyo muri EICV mu myaka ya 2010–2011. Ayo mabarura yombi asobanura kimwe⁶ *imibereho* kandi yose asobanura imirongo y'ubukene mu bihugu hamwe n'imirongo PPP kimwe. Ibi bivuga ko ijanisha ry'ibyegeranyo ku bukene kuva ku ikarita y'icyiciro nshya ya 2010–2011 rigereranywa n'iryo ku ikarita y'icyiciro ishaje⁷ ya 2005–2006. Mbese uwakoreshaga ikarita y'icyiciro ishaje ashobora kwemeza impinduka mu gihe nk'uko ikinyuranyo

⁶ NISR (2014, pp. 5, 29) ivuga ko ipima ry'imibereho y'ingo zose ziteranyije rigereranywa muri EICV ya 2005/6 n'ya 2010/11.

⁷ Ibi bigaragazwa n'imirongo ine y'ubukene ishyigikirwa n'amakarita y'icyiciro yombi inshya n'ishaje: 100% n'150% by'umurongo w'igihugu, n'idolari 1.25 n'amadolari 2.50/ku muni PPP 2005.

hagati y'byemejwe ku ikurikiranabikorwa ku ikarita nshya n'ibyemejwe ku murongo ikarita y'icyiciro ishaje yari iriho.

2.4 Imirongo y'ubukene

McKay na Greenwell (2007) banditse ku murongo w'ubukene mu gihugu cy'u Rwanda, waguwe cyane kubera EICV yo mu myaka ya 2000–2001. Ikoresha ijambo *abakuze ku rugero rumwe* mu kunoza igisobanuro ko imibereho ihindagurika bitewe n'imyaka n'igitsina. Hanyuma imirongo y'ubukene yajyanishijwe n'ibiciro ku cyegeranyo mu Rwanda hose mu mirimo ku isoko y'amakuru muri 2010–2011 hakoreshejwe itandukana ry'ibiribwa n'ibitari ibiribwa mu kwezi no mu ntara. Uburyo bw'amakuru y'ibiciro ku biribwa bukoresha amakuru y'igice cy'ukwezi “yakusanyijwe na gahunda ya MINAGRI yari ishinzwe gukusanya amakuru ku biciro yari izwi nka PASAR: *Programme d'Appui à la Sécurité Alimentaire au Rwanda* (Gahunda igamije kuzamura ubusugire bw'ibiribwa mu Rwanda, urup. 5). Uburyo bw'amakuru ku ikoreshwa ry'ibitari ibiribwa bwakuwe mu mpapuro zo mu butegetsi ku biciro by'ibikenerwa mu mijyi, na none mu kwezi no mu ntara.

Gukoresha uburyo bw'ibiguzi ku bikenerwa by'ibanze (Observatoire de la Pauvreté, nta tariki; Ravallion na Bidani, 1994), umurongo w'ibiribwa usobanuwe nk'ikiguzi cya kalori 2500 uherye ku cyegeranyo cy'agatebo k'ibiribwa kitegerejwe muri EICV ya 2000–2001 mu batindi nyakujya bangana na 60 ku ijana by'abantu bose. Kuri EICV ya 2010–2011 hamwe n'icyegeranyo cy'ibiciro mu Rwanda hose mu kazi ku isoko

y'amakuru, ibi bisobanuye icyegeranyo cy'ubukene ku murongo w'ibiribwa cy'amafaranga 282 y'u Rwanda ku muntu mukuru ku muni, bitanga ijanisha ry'ubukene mu biribwa cya 20.6 ku ijana tubariye ku rugo na 24.1 ku ijana tubariye ku muntu (ishusho ya 1).

Umurongo w'ubukene ku gihugu (rimwe na rimwe bita "100% ry'umurongo w'igihugu") usobanurwa nk'icyegeranyo ku mibereho ku ngo ziri gukoresha ibiribwa bingana na ± 10 ku ijana ku murongo w'ibiribwa. Ku Rwanda icyegeranyo muri EICV mu myaka ya 2010–2011, bingana n'amafaranga 402 ku muntu mukuru ku muni, bitanga ijanisha y'ubukene mu Rwanda hose bya 40.2 ku ijana habariwe urugo na 44.9 ku ijana habariwe ku muntu (ishusho ya 1). Kubera ko imiryango ifasha abakene mu Rwanda ishobora gushaka gukoresha imirongo y'ubukene itandukanye, uru rupapuro ruhuza amanota yakuwe ku ikarita rukumbi y'icyiciro cy'ubukene bushoboka mu ngo ku mirongo 10:

- Ibiribwa
- 100% by'igihugu
- 150% by'igihugu
- 200% by'igihugu
- Umurongo ugaragaza icya kabiri cy'abaturage gikennye cyane muni y'100% by'umurongo w'igihugu
- Idolari 1.25/ku muni 2005 PPP
- Amadolari 2.00/ku muni
- Amadolari 2.50/ku muni
- Amadolari 5.00/ku muni
- Amadolari 8.44/ku muni

Imirongo ine muri iyi yanagaragaraga ku ikarita y'icyiciro ishaje y'imyaka ya 2005–2006: 100% na 150% by'igihugu, hamwe n'idolari 1.25 n'amadolari \$2.50/ku muni 2005 PPP. Iyi mirongo ine ishobora gukoreshwa hapimwa impinduka mu gihe hashingiwe ku murongo w'intangiriro wavuye ku ikarita y'icyiciro ishaje y'imyaka ya 2005–2006 no ku ikurikiranabikorwa ryakuwe ku ikarita nshya y'icyiciro ya 2010–2011.

Ni gute iyi mirongo y'ubukene isobanurwa? Imirongo ya 150% na 200% y'igihugu igabanyika n'umurongo w'igihugu.

Umurongo ugaragaza icya kabiri cy'abaturage gikennye cyane muni ya 100% by'umurongo w'igihugu usobanurwa utandukanyijwe muri buri Ntara muri eshanu z'u Rwanda, igiteranyo cy'imibereho n'urugo ku muntu mukuru mu baturage (si ingo si n'abantu bakuru) muni ya 100% ry'umurongo w'igihugu (U.S. Congress, 2004).

Umurongo w'idolari 1.25 ku muni PPP 2005 ukomoka ku:

- icyegeranyo cy'umurongo w'ubukene cy'idolari 1.25 ku muni mu Rwanda hose muri Mutarama 2006 (Schreiner, 2010a): Amafaranga y'u Rwanda 303.506
- Urwego rw'ibiciro ku muguzi wo mu mujyi muri Mutarama 2006 (Schreiner, 2010a): 124.3
- icyegeranyo cy'urwego rw'ibiciro ku muguzi wo mu mujyi muri EICV ya 2010–2011, akazi kakorewe ku isoko y'amakuru: 196.7⁸
- Umurongo w'ubukene w'igihugu ku cyegeranyo mu Rwanda hose (ishusho ya 1): amafaranga y'u Rwanda 402
- Imirongo y'igihugu y'ubukene mu Ntara eshanu zigize u Rwanda (Ishusho ya 2)

Duhereye ku murongo w'idolari 1.25 ku muni na 2005 PPP muri Mutarama 2006 (Schreiner, 2010a) angana n'amafaranga y'u Rwanda 303,506, icyegeranyo cy'ibiciro ku murongo mu Rwanda hose muri EICV ya 2010–2011, akazi kakorewe ku isoko y'amakuru, ni (Sillers, 2006):

$$\begin{aligned} & \text{Amafara ng a y' u Rwanda } 303.506 \cdot \left(\frac{\text{CPI}_{\text{ikigereranyo Ugushy ingo 2010 - Ukwakira 2011}}}{\text{CPI}_{\text{Mutarama 2006}}} \right) \\ & = 303.506 \cdot \left(\frac{196.7}{124.3} \right) = \text{RWF } 480.29. \end{aligned}$$

Imirongo ya PPP 2005 ni ubwikube bw'idolari 1.25 ku muni. Umurongo w'amadolari 8,44 ku muni ni amasantile 75 ku muturage (si imibereho) ku isi nk'uko byapimwe na Hammond n'abo bafatanyije (2007).

Umurongo PPP 2005 ukoreshejwe ku Rwanda mu cyegeranyo. Mu Ntara iyi n'iyi, umurongo w'idolari 1.25 ku muni ni umurongo w'idolari 1.25 ku muni mu

⁸ Aya makuru ku mihindagurikire y'agaciro k'ifaranga (CPI) yakuwe kuri statistics.gov.rw/sites/default/files/user_uploads/files/books/CPI_time_series_May_2015.xls (byafashwe kuwa 29 Kamena 2015) na raporo zakuwe kuri statistics.gov.rw/survey/consumer-price-index-cpi-survey.

Rwanda hose, dukubye n’umurongo w’igihugu muri iyo Ntara, tugabanyije icyegeranyo cy’umurongo w’igihugu.

Urugero, umurongo w’idolari 1.25 ku muni, PPP 2005 muri Kigali, mu Rwanda hose ni umurongo w’idolari 1.25 ku muni, amafaranga y’u Rwanda 480 (ishusho ya 1), bakubye n’umurongo w’igihugu muri Kigali, amafaranga y’u Rwanda 458 (ishusho ya 2), hanyuma bagabanya icyegeranyo cy’umurongo w’igihugu mu Rwanda hose, amafaranga y’u Rwanda 402 (ishusho ya 1). Ibi bitanga umurongo w’idolari 1.25 ku muni muri Kigali, amafaranga y’u Rwanda $480 \times 458 \div 402 = F 547$ (ishusho ya 2).⁹ Ijanisha ry’ubukene tubariye ku muntu, idolari 1.25 ku muni yatanzwe na PovcalNet¹⁰ ya Banki y’isi kuri EICV ya 2010–2011 ni 63.0 ku ijana. Bityo ntibiri kure ya 61.7 ku ijana mu shusho ya 1. Igereranya ry’idolari 1.25 ku muni, aha ni iryo gutoranywa (Schreiner, 2014) kubera ko PovcalNet ntitangaza:

- Imirongo yayo mu mafaranga y’u Rwanda
- Igihe/ahantu by’ingero fatizo zayo ku biciro
- Niba/ukuntu ijyanisha n’ibinyuranyo by’uturere mu biciro
- Uko igabanya ibyo PPP 2005 ikomokaho

⁹ Bitewe no kuburungushura mu rugero rwo mu byanditse, ishusho ya 2 iragaragaza 548, si 547.

¹⁰ iresearch.worldbank.org/PovcalNet/index.htm, byafashwe kuwa 7 Nyakanga 2015.

Abafatanyabikorwa ba USAID mu bato mu Rwanda bakoresha ikarita y'icyiciro cy'ubukene busanzwe mu gutanga raporo muri USAID ku majanisha y'ubukene bashobora gukoresha umurongo w'idolari 1.25 ku muni, PPP 2005. Ibi ni ukubera ko USAID isobanura—"kennye cyane"—nk'abo bantu mu ngo bakoresha ibikenerwa ku muturage ku muni biri muni y'umurongo w'ubukene uruta iyindi muri iyi ikurikira:

- Umurongo ugaragaza icya kabiri cy'abaturage gikennye cyane kiri muni y'100% ry'umurongo w'igihugu (amafaranga 246, n'ijanisha ry'ubukene ku muntu cya 22.5 ku ijana, ishusho ya 1)
- Idolari 1.25 ku muni, PPP 2005 (amafaranga y'u Rwanda 480, n'ijanisha ry'ubukene ku muntu cya 61.7 ku ijana)

3. Kubaka ikarita y'icyiciro

Ku Rwanda, hafi ibipimo 75 bishoboka bitegurwa muri aha hantu:

- Abagize urugo (nk'umubare w'ababa mu rugo)
- Uburezi (nk'amashuri y'(uruta abandi) umugore/umukuru w'urugo/uwo bashakanye)
- Inzu (nk'ubwoko bw'igisenge n'inkuta)
- Nyir'imitungo iramba (nk'uriri, telefoni zigendanwa)

Ishusho ya gatatu kiratondeka ibipimo birasa ku ntego, byajemo kubera iturufu yo gushidikanya gushingiye ku gutesha agaciro (Goodman na Kruskal, 1979), igaragaza uburyo igipimo iki n'iki cyifitemo gusuzuma icyiciro cy'ubukene.¹¹

Hamwe mu hantu ikarita y'icyiciro ikora ni ugupima impinduka mu bukene mu gihe. Bityo, mu gihe cyo gutoranya ibipimo no kugumana ibindi bihabwa agaciro ntibihinduke, icyifuzwa gishyirwa mu bipimo byinshi bigisobanura. Urugero, itunga ry'uburiri rishoboka cyane kwitegura impinduka nk'igisubizo cy'impinduka mu bukene kurusha uko imyaka y'umugabo, umutware w'urugo/uwo bashakanye.

Ikarita y'icyiciro ubwayo yubatswe hakoreshejwe icyiciro cy'ubukene hashingiwe ku 100% ry'umurongo w'ubukene w'igihugu n'igabanuka ry'ibinyuranyo bisa mu gukata udutsinda tw'inyigo. Gutoranya ibipimo bisaba kubyigaho n'ibarurishamibare.

Intambwe ya mbere ni ugukoresha “*Logit*” (urugero fatizo rw'ibinyuranyo bisa) mu kubaka ikarita y'icyiciro imwe kuri buri gipimo cyateguwe. Ingufu za buri karita

¹¹ Ingano yo gushidikanya ntiyakoreshejwe nk'igishingirwaho mu gutoranya ibipimo by'ikarita y'icyiciro; ni uburyo gusa bwo gushyira ku murongo ibipimo byateguwe mu ishusho ya 3.

y’amanota mu gushyira ingo mu nzego ku miterere y’ubukene zipimwa nka “c” (SAS Institute Inc., 2004).

Kimwe muri ibi bipimo by’ikarita y’icyiciro gitoranywa hashingiwe ku mpamvu nyinshi (Schreiner n’abo bafatanyije, 2014; Zeller, 2004). Muri zo harimo kwivugurura mu guhuza, kwemerwa n’ababikoresha gushoboka (byashishojweho mu bwiyoroshye, ikiguzi cy’ikusanya, kandi “bihamye ku buryo bugaragara” mu buryo bw’uburambe, ibyo ubwenge buzi, n’ibyumviro bimwe), kuba impinduka mu bukene zigufasheho, ubwoko bw’ibipimo, gukoreka mu duce dutandukanye, zenda kugirana isano n’ubukene mu gihe ku bw’impinduka zitihuta, ireme mu gutandukanya ingo no mu itanga ry’ibikenerwa kandi ryoroshye igenzura.

Itsinda ry’ibipimo bibiri ku ikarita y’icyiciro noneho ryubatswe, buri cyose cyongera igipimo cya kabiri kuri kimwe cy’ikarita y’icyiciro tsinda ku ikubitiro rya mbere. Iyipimo bibiri biruta ibindi ku ikarita y’icyiciro noneho byatoranyijwe, nanone hakoreshejwe ubushishozi ku iringaniza “c” hamwe n’ikigendeweho kitarebana n’ibarurishamibare. Izo ntambwe zisubirwamo kugeza ikarita y’icyiciro igize ibipimo 10 byose bikorana neza.

Intambwe ya nyuma ni uguhindura ibipimo bya “*Logit*” mu mibare ishyitse kugira ngo igiteranyo cy’amanota kibe mu itsinda riva kuri zero (muni cyane y’umurongo w’ubukene) kugera ku ijana (muni gato y’umurongo w’ubukene.)

Iri huriro ry'amabwiriza rirasa neza n'ay'uburyo bw'igereranya ry'inyigo ebyiri (*least-squares regression*) ku ntambwe zihuriraho zishingiye kuri R^2 . Ritandukanye n'intambwe zisanzwe kuko itoranya ry'ibipimo riha agaciro ibisabwa n'ibidasabwa¹² n'ibarurishamibare. Gukoreshwa ry'ibyo ibarurishamibare ridasaba bishobora kuvugurura ibitahindukaga bitewe n'igihe no gufasha kwizera ko ibipimo bisanzwe, bikora kandi byemewe ku babikoresha.

Ikarita y'icyiciro cy'ubukene busanzwe hano irakoreshwa mu Rwanda hose. Amasuzuma kuri Indonesia (World Bank, 2012), Bangladesh (Sharif, 2009), India na Mexico (Schreiner, 2006 na 2005a), Sri Lanka (Narayan na Yoshida, 2005), na Jamaica (Grosh na Baker, 1995) yatanze ibitekerezo ko gukata ikarita y'icyiciro mo ibice, ni ukuvuga umujyi n'igiturage bidatuma bagera neza ku ukuri bifuzaga. Muri rusange, gukata ibice byagombye guteza imbere ukuri kw'ibigereranyo ku majanisha y'ubukene (Diamond n'abo bafatanyije, 2016; Tarozzi na Deaton, 2009), ariko byagombye nanone kuzamura ingaruka zo gushyirwa cyane mu ngiro (Haslett, 2012).

¹² Ikigenderwaho mu ibarurishamibare mu gutoranya igipimo si agaciro k'ibikuba p ahubwo ni uruhare rw'igipimo mu gushyira ingo mu nzego hakurikijwe imiterere y'ubukene.

4. Imirongo ngenderwaho mu ikoreshwa ry'ikarita y'icyiciro

Imbogamizi y'ingenzi mu gukora ikarita y'icyiciro si ukuzamura cyane ukuri mu ibarurishamibare, ahubwo ni ukuvugurura amahirwe yo kuba ikarita y'icyiciro iri gukoreshwa (Schreiner, 2005b). Iyo imishinga ihabwa amanota inaniwe, akenshi ntibiba bitewe no guhusha kw'ibarurishamibare, ahubwo biterwa n'ukunanirwa kw'ikigo mu gufata ibyemezo byo gukora igikenewe ngo itangwa ry'amanota rijye mu buryo bwaryo no guha amahugurwa abakozi bacyo no kubemeza gukoresha ikarita y'icyiciro uko bikwiye (Schreiner, 2002). Uko biri kose Amakarita y'amanota asobanutse aba agamije ukuri kumwe, bitewe n'igikorwa cyizweho kikitegerezwa kizwi nka “*flat maximum*” (Caire na Schreiner, 2012; Hand, 2006; Baesens n'abo bafatanyije, 2003; Lovie na Lovie, 1986; Kolesar na Showers, 1985; Stillwell, Barron, na Edwards, 1983; Dawes, 1979; Wainer, 1976; Myers na Forgy, 1963).

Inzitizi ziterwa gake n'uburyo ikintu gikoze, zigaterwa cyane n'abantu, si ibarurishamibare, ahubwo ni ubuyobozi bw'ikigo butera impinduka. Ukuri koroha kurusha gutoza.

Ikarita y'icyiciro aha ikorerwa gutera imbaraga imyumvire n'icyizere bityo abayikoresha kakazifuza kuyigira iyabo no kuyikoresha uko bikwiye. Birumvikana, ibirebana no ukuri , ariko igomba kuba iringaniye byo kutagorana, yoroshye gukoresha, kandi “ifite agaciro ku bigaragara”. Za gahunda zishoboye cyane gukusanya amakuru, kubara amanota, no kwitondera ibisubizo mu gihe, mu mibonere yazo, gushyira mu byiciro bidafite icyo byungura kigaragara ku kazi kazo, niba se nanone igikorwa cyose muri rusange bakibona nk'igifite icyo kivuze.

Kuri aha turangirije, ikarita y'icyiciro y'u Rwanda irakwiye ku rupapuro rumwe. Imikorerwe yayo, ibipimo n'ingingo birasanzwe kandi bigaragaza umucyo. Akazi k'inyongera karagabanyijwe; abatari inzobere bashobora kubara amanota n'intoki aho akazi kari gukorerwa kubera ko ikarita y'icyiciro ifite:

- Ibipimo 10 gusa
- Ibipimo byo “guhitemo mu bisubizo gusa”
- Ingingo zisanzwe gusa (imibare ishyyitse, kandi nta mibare ihambaye irenze guteranya)

Umukozi wok u isoko y'amakuru agakoresha ikarita y'icyiciro nshya y'u Rwanda

ya 2010–2011 azabasha:

- Kwandika ibiranga ibarura, itariki y'ibiganiro, igipimo cy'igihugu (“RWA”), igipimo cy'ikarita y'icyiciro (“002”) n'ingano y'ibice birebwa n'ibarura kugera ku rugo rw'ubazwa
- Kwandika amazina n'ibiranga ubazwa (si ngombwa ko ari we usubiza), abakozi b'aho amakuru ari, n'ingingo z'ingenzi za gahunda y'akazi
- Kuzuza ku rupapuro rw'inyuma rw'akazi ibi kuri buri muntu uba mu rugo:
 - Izina ry'irikirisitu
 - Imyaka
 - Uko urugo rutuwe nibura mu mezi atandatu mu mezi cumi n'abiri ashize
 - Niba umuntu abarwa *nk'uba mu rugo*
 - Niba umuntu ari umwe mu baba mu rugo kandi afite imyaka 17 cyangwa munsu yayo
 - Niba umuntu ari umwe mu baba mu rugo afite imyaka 6 cyangwa hejuru yayo, niba hari umurimo w'ubuhinzi-bworozi akora (ubuhinzi, ubworozi, ubworozi bw'amafi, cyangwa ubuhinzi bw'amashyamba) ahemberwa mu mezi 12 ashize
 - Niba umuntu ari umwe mu baba mu rugo afite imyaka 6 cyangwa hejuru yayo, niba hari umurimo utari uw'ubuhinzi-bworozi akora kimwinjiriza amafaranga cyangwa indi nyungu mu mezi 12 ashize
- Kwandika umubare wose w'ababa mu rugo ku mutwe w'ikarita y'icyiciro inyuma y'“umubare w'ababa mu rugo:”
- Kwandika igisubizo ku bipimo by'ikarita y'icyiciro bya mbere, bya kabiri, bya gatatu bishingiye ku bisubizo byanditswe ku rupapuro rw'inyuma rw'akazi.
- Gusoma buri kibazo muri birindwi bisigaye, kimwe kimwe mu biri ku ikarita y'icyiciro, uzengurutse uruziga ku bisubizo bifite ireme n'ingingo zabyo, kand wandika buri gaciro k'amanota mu kazu kari hirya cyane iburyo
- Guteranya amanota ngo ubone igiteranyo cy'amanota
- Gushyira mu bikorwa politiki y'irasantego (niba ihari)
- Gutanga urupapuro rw'amanota mu biro gahuza kugira ngo byandikwe kandi bibikwe

Birumvikana, abakorera ku isoko y'amakuru bagomba guhabwa amahugurwa.

Ubwiza bw'umusaruro buterwa n'ubwiza bw'imirimo yakozwe. Amahugurwa arakosora,

kandi yagombye gushingirwaho kuri byose kandi by'umwihariko ku “Amabwiriza yo

gukoresha ibirango byo mu mbonerahamwe” kuri uru rupapuro.

Iyo ibigo cyangwa abakozi b'ku isoko y'amakuru begeranya amakuru yabo, bakizera ko inyungu yabo iri ugukabiriza ijanisha y'ubukene (urugero, niba abaterankunga babahembera ko ijanisha y'ubukene byabaye binini), aho ngaho ni ubupfura kubikora mu gihe cyo kugenzura ubwiza basubira mu makuru banagenzura kuri tombola (Matul na Kline, 2003).¹³ Ikigo IRIS (2007a) na Toohig (2008) ni ingero ngenderwaho nk'ipata n'urugi mu gukora ingengo y'imari, guha amahugurwa abakozi b'ku isoko y'amakuru n'abagenzuzi, ibikoresho, guca amatsinda y'inyigo, gukora ibiganiro, kugerageza ibiganiro, kwandika amakuru, no kugenzura ubwiza.

By'umwihariko, mu gihe cyo gukusanya ibipimo by'ikarita y'icyiciro, byoroshye kurusha ubundi buryo bwo gupima ubukene, bikomeza kuruhanya. Amahugurwa n'ibisobanuro by'amagambo ku ikarita y'icyiciro ni ingenzi, kandi abakozi b'ku isoko y'amakuru bashobora kubyiga bashyizeho umwete no gukurikirana "Amabwiriza yo gukoresha ibirango byo mu mbonerahamwe" igaragara ku mpera z'uru rupapuro, nk'uko

¹³ Iyo gahunda idakeneye abakozi bo ku isoko y'amakuru n'ababazwa kugira ngo hamenyekane amanota yahujwe n'ibisubizo, aho ishobora gukoresha uburyo bw'ilkarita y'icyiciro idaheza amanota, hanyuma igakoresha amanita ikanandika ibyiciro nyuma mu biro gahuza. Schreiner (2012b) ashyigikira ko guhisha amanota muri Colombia (Camacho and Conover, 2011) bitaciye intege ikopera, mu buryobwose, gukopera kw'abakorera mu biro gahuza byateye ikibazo cyane kurusha gukopera kw'abakozi bo ku isoko y'amakuru n'abasubiza. Kandi nubwo amanita yaba ahishwe, abakozi bo ku isoko y'amakuru n'abasubiza bashobora gukoresha imyumvire imwe bagatekereza uko ibisubizo bihujwe n'ubukene.

iyi “Amabwiriza”—ku “Rupapuro rw’inyuma rw’akazi”—ni ibice nyir’izina by’ikarita y’icyiciro cy’ubukene.¹⁴

Ku rugero rwa Nigeria, inyigo imwe (Onwujekwe, Hanson, na Fox-Rushby, 2006) abayihya amanota basanze iri hasi cyane bikabije kandi nta guhuza ku masuzuma atandukanye yakozwe ku bipimo kandi nyamara bigaragara nk’ibyoroshye nko kuvuga ngo urugo rutunze imodoka. Mu gihe kimwe, Grosh na Baker (1995) batekereje ko uguhishahisha imitungo iramba uko yakabaye bitagira icyo bikora ku irasantego. Ku rwego rwa mbere rw’irasantego muri gahunda itigenga yo kohereza amafaranga muri Mexico, Martinelli na Parker (2007, urup. 24–25) babona ko “guhishahisha [ubutunzi w’imitungo iramba] byakwiriye henshi, ariko, bidahungabanya cyane, uretse ku bicuruzwa bimwe na bimwe . . . [kandi] kugaragaza byose akaba ari rusange ku bicuruzwa bike”. Nyamara, nk’uko byakozwe muri Mexico ku ntambwe ya kabiri y’igikorwa ku irasantego, raporo nyinshi za bene zo zipfuye zishobora gukosorwa (cyangwa kwirindwa ku ikubitiro rya mbere) n’abakozi b’ku isoko y’amakuru basura ingo. Iki ni igikorwa gitangwaho inama ku miryango ifasha abakene, mu karere ikoresha gushyira mu byiciro ngo igere ku irasantego mu Rwanda.

¹⁴ Imirongo ngenderwaho hano niyo yonyine umuryango yagahaye abakozi bo ku isoko y’amakuru. Ibindi byaboneka mu bisobanuro byarekerwa ubushishozi bw’abakozi bo ku isoko y’amakuru n’abasubiza, nk’uko ibi wagira ngo bisa n’ibyo NISR ikora muri EICV.

Mu bijyanye no gushyira mu bikorwa no gukora amatsinda y'inyigo, umuryango

ugomba gukora amahitamo kuri ibi:

- Ni nde uzatanga amanota
- Ni gute amanota azandikwa
- Abagenerwabikorwa bazahabwa amanota ni abahe
- Ni abagenerwabikorwa bangahe azahabwa amanota
- Ni inshuro zingahe abagenerwabikorwa bazahabwa amanota
- Niba amanota azakoreshwa birenze rimwe mu gihe
- Niba abagenerwabikorwa badahinduka bazahabwa amanota rimwe mu gihe

Muri rusange, gukora amatsinda y'inyigo bishobora gukurikiza intego z'umuryango ku mwitozo, ibibazo byo gusubizwa, n'ingengo y'imari. Intego y'ingenzi yakabaye ukwizera ko itsinda ry'inyigo rihagarariye neza abantu inyigo yasobanuye, kandi koitangwa ry'amanota ku bukene rizagaragariza umuryango ibyo ugambiriye kumenya.

Abatari inzobere bakoresha ikarita y'icyiciro ku isoko y'amakuru bashobora kuba:

- Abakozi b'umuryango
 - Abandi bantu
- Ibisubizo, amanota, n'ibishoboka ku bukene bishobora kwandikwa aha:
- Urupapuro bakiri ku isoko y'amakuru, hanyuma bakabibika mu biro gahuza
 - Urupapuro bakiri ku isoko y'amakuru, hanyuma bikimurirwa mu bubiko bw'amakuru kuri mudasobwa cyangwa mu mbonerahamwe y'ikoranabuhanga mu biro gahuza
 - Ibikoresho by'ikoranabuhanga ku isoko y'amakuru, hanyuma bikoherezwa mu bubiko bw'amakuru kuri mudasobwa

Ku bantu b'abagenerwabikorwa inyigo ireba barebwa cyane n'ikibazo kihariye

ku bucuruzi, abagenerwabikorwa bo guhabwa amanota bashobora kuba:

- Abagenerwabikorwa bose bireba (ibarura)
- Itsinda ry'inyigo rihagararira abagenerwabikorwa bose bireba
- Abagenerwabikorwa bose bireba mu itsinda ry'inyigo mu biro biri ku isoko y'amakuru byose
- Itsinda ry'inyigo rihagarariye abagenerwabikorwa bose ireba mu itsinda ry'inyigo ry'ibiro byose ireba biri ku isoko y'amakuru

Iyo bitagenwe n'izindi mpamvu, umubare w'abagenerwabikorwa bo guhabwa amanota ushobora guturuka ku nzira igena ingano y'amatsinda y'inyigo (iri bugaragazwe) mu kugera ku cyizere cyifuzwa no ku mwitangirizwa w'icyizere cyifuzwa. Igishimangirwa, nyamara, nticyakabaye ukugira itsinda ry'inyigo rinini bihagije mu kugera ku rwego uru n'uru rw'ingenzi mu ibarurishamibare, ahubwo ni ukugera ku itsinda ry'inyigo rihagararira abantu basobanuwe neza ryaturutsemo bityo isesengura ry'ibyavuye mu ibarura bigashobora amahirwe yo gutanga amakuru asobanutse ku bibazo by'ingenzi umuryango ufite.

Umuvuduko w'ingiro ushobora kuba:

- Nk'umushinga w'inshuro imwe (utagira impinduka z'ibyemezo)
- Buri myaka ibiri (cyangwa ku kindi gihe kidahinduka cyangwa gihinduka ku gihe runaka, habaho impinduka ku byemezo)
- Buri gihe umukozi wo ku isoko y'amakuru asura umugenerwabikorwa mu rugo (habaho impinduka ku byemezo)

Mu gihe ikarita y'icyiciro ikoreshejwe inshuro zirenze imwe kugira ngo impinduka z'ibyemezo ku majanisha y'ubukene, ishobora gukoreshwa:

- Ku itsinda ry'abagenerwabikorwa batandukanye batowe muri ba bantu
- Kuri rya tsinda ry'abagenerwabikorwa n'ubundi

Urugero rw'itsinda ry'amahitamo rwagaragajwe na BRAC na ASA, imiryango y'imari iciriritse muri Bangladesh aho buri wose wari ufite nka miliyoni 7 z'abagenerwabikorwa, kandi yagaragaje ubushake mu gukoresha ikarita y'icyiciro cy'ubukene (Schreiner, 2013a) n'itsinda ry'inyigo rya 25,000. Mu gutegura kwabo ni uko abashinzwe inguzanyo bose mu itsinda ry'amashami yatoranyijwe kuri tombola riha amanota abagenerwabikorwa buri gihe babasuye mu ngo (hafi rimwe mu mwaka) nka kimwe mubyo bashinzwe mu kazi kabo mbere y'uko inguzanyo zisohoka. Banditse ibisubizoku rupapuro bari ku isoko y'amakuru mbere yo kohereza impapuro zuzuzwa mu biro gahuza ngo byinjizwe mu bubiko bw'amakuru kuri mudasobwa no guhindurwa mu ngano ishoboka ku bukene.

5. Kwemeza urugero ubukene buriho ku ngo

Igiteranyo cy'amanota yo ku ikarita y'icyiciro ku rugo yitwa *amanota (score)*.

Ku Rwanda, umwitangirizwa w'amanota uva kuri 0 (aho bishoboka cyane muni y'umurongo w'ubukene) n'ijana (bishoboka buhoro muni y'umurongo w'ubukene). Mu gihe amanota yo hejuru agaragaza gake gashoboka mu kuba umukene, amanota ubwayo afite ingero fatizo zimwe. Urugero, gukuba amanota na 2 bigabanya ingano ishoboka yo kuba muni y'umurongo w'ubukene watanzwe, ariko ntawucamo mu cyeragati.

Kugira ngo haboneke ingero fatizo zigize, amanota agomba kubarirwa ku rugero rushoboka rwo kuba umukene, bivuze, uburyo bushoboka bwo kuba muni y'umurongo w'ubukene. Ibi bikorwa binyuze mu mbonerahamwe zisanzwe. Ku rugero rw'100% ry'umurongo w'igihugu, amanota 30–34 aru ku rugero rw'ubukene rwa 50.2 ku ijana, naho amanota 35–39 ari ku rugero rw'ubukene rwa 34.7 ku ijana (ishusho ya 4).

Urugero ubukene buriho rushyizwe hamwe n'amanota bihinduka bitewe n'umurongo w'ubukene. Urugero, amanota 30–34 yashyizwe hamwe n'urugero rw'ubukene rwa 50.2 ku ijana ku 100% ry'umurongo w'igihugu, ariko wa 76.6 ku ijana ku murongo¹⁵ w'idolari 1.25 ku muni PPP 2005.

¹⁵ Dutangiriye ku isura ya 4, amasura menshi afite ibisobanuro 10, buri kimwe ku murongo w'ubukene. Mu kubirekera ku murongo, amashusho yashyizwe mu matsinda n'umurongo. Amashusho rukumbi arebana n'imurongo yose yashyizwe ku mashusho ku 100% ry'umurongo w'igihugu.

5.1 Kwegeranya amanota n'ingero ubukene buriho

Amanota runaka yegeranyijwe n'urugero ubukene buriho, urugero ubukene buriho rusobanurwa nk'umugabane/uruhare rw'ingo mu kwegeranya udutsinda duto tw'inyigo dufite amanota, tunakoresha ibikenerwa ku muntu mukuru cyangwa ku muturage biri muni y'umurongo w'ubukene watanzwe.

Ku rugero rw'100% ry'umurongo w'igihugu (ishusho ya 5), hari ingo 11,575 (zisanzwe) mu kwegeranya udutsinda duto n'amanota ya 30–34. Muri zo, 5,815 (zisanzwe) ziri muni y'umurongo w'ubukene. Urugero ubukene buriho rwegeranyijwe n'amanota 30–34 biba kandi 50,2 ku ijana kubera ko $5,815 \div 11,575 = 50.2$ ku ijana.

Mu kugaragaza ku 100% ry'umurongo w'igihugu n'amanota 35–39, hari ingo 12,381 (zisanzwe) mu itsinda ry'inyigo ryahujwe, muri zo 4,298 (zisanzwe) ziri muni y'umurongo w'ubukene (ishusho ya 5). Urugero rushoboka ku bukene kuri icyi cyiciro cy'amanota ni $4,298 \div 12,381 = 34.7$ ku ijana.

Uburyo bumwe bwakoreshejwe mu guhuza amanota n'urugero rw'ubukene bwageranyijwe ku mirongo 10 y'ubukene.¹⁶

Nubwo ku gice kimwe ikarita y'icyiciro yubakiye ku bushishozi bufitanye isano n'ibidasabwa n'ibarurishamibare, uburyo bw'ihuza butuma habaho urugero ubukene buriho rufite ukuri, ni ukuvuga, raturutse ku mirongo y'ubukene igendeye ku ngano

¹⁶ Kugira ngo hizerwe ko urwego rw'ubukene rutigera ruzamuka nk'uko ibyiciro bizamuka, ibyemejwe mu matsinda y'ibyiciro byegeranye rimwe na rimwe icyegeranyo cyayo gisubirwamo kenshi mbere yo gushyira amanota ku byiciro. Ibi birinda ukuri binarinda ababikoresha impungenge mu gihe cyo gukora amatsinda y'agaciro mu cyiciro hakoreshejwe ingo nkeya nyamara byaganisha ku byiciro biri hejuru mu gihe cyo gushyirwa ku rwego rwo hejuru ubukene bwemejweho.

n’amakuru y’ibarura ku mibereho. Urugero ubukene buriho rwakomotse ku ihuza rwakagize ukuri n’ubwo uburyo bwo gutoranya ibipimo n’amanota bitigeze bikoresha amakuru ayo ari yo yose. Mbese, amakarita y’amanota afite ukuri agaragaza ireme akenshi aba yubatse hakoreshejwe ubushishozi bw’abahanga mu gutoranya ibipimo n’amanota (Fuller, 2006; Caire, 2004; Schreiner n’abo bafatanyije, 2014). Birumvikana ikarita y’icyiciro hano igizwe n’amakuru n’ubushishozi. Kuba iyi nyandiko ivuga ko amahitamo amwe n’amwe mu ikorwa ry’ikarita y’icyiciro—nk’amasesengura yose y’ibarurishamibare—akorwa mu bushishozi, uko yagenda kose ntihakana ukuri kw’ingano ishoboka y’ubukene, nk’uko uku kuri guterwa n’ikoreshwa ry’amakuru mu kwegeranya amanota, bidatewe n’ikoreshwa ry’amakuru (nta n’ikindi) mu iyubaka y’ikarita y’icyiciro.

Nubwo amanota ku ikarita y’icyiciro cy’ubukene mu Rwanda ari inshuro zo mu buryo bw’isesengura bwa “*Logit*” zahinduwe, amanota (atahinduwe) ntabarirwa ku rugero rushoboka rw’ubukene hakoreshejwe uburyo bwa “*Logit*” ya $2.718281828^{score} \times (1 + 2.718281828^{score})^{-1}$. Ibi biterwa n’uko inzira ya “*Logit*” izwi na bake kandi iruhanyije kwandikwa n’intoki. Abatari inzobere borohere cyane no gusobanura urugero ubukene buriho nk’uko uruhare rw’ingo ku manota runaka mu ihuza ry’amatsinda y’inyigo ruri muni y’umurongo w’ubukene. Kuva ku manota werekera ku rugero rushoboka rw’ubukene muri iyi nzira bidasaba umubare na busa, imbonerahamwe y’amakuru gusa. Ubu buryo bw’ihuza nabwo bushobora kuvugurura ukuri, cyane cyane ku matsinda y’inyigo manini.

5.2 Ukuri kw'ibigereranyo by'ingero zishoboka ubukene buriho

Kubera ko isano iri hagati y'ibipimo n'ubukene idahindukana n'igihe no kuba ikarita y'icyiciro ikoreshwa ku ngo zihagarariye abantu bamwe bakoreweho ikarita y'icyiciro ku ikubitiro, bituma ubu buryo bw'ihuza butanga amajanisha y'ingero zishoboka ubukene buriho atarimo ukwibeshya. Aitarimo ukwibeshya bivuze ko mu matsinda y'inyigo yasubiwemo akuwe mu bantu bamwe, icyegeranyo cyemejwe gihura n'umubare nyakuri w'abantu. Duhereye kuri uku kugenekereza ko hejuru, ikarita y'icyiciro nanone yemeza amajanisha y'ubukene ku gihe runaka mu gihe n'ibyemejwe bitarimo ukwibeshya ku mpinduka mu majanisha y'ubukene hagati y'ibihe bibiri mu gihe.¹⁷

Birumvikana, isano iri hagati y'ibipimo n'ubukene izana impinduka, ku rugero rutazwi mu gihe, no mu matsinda mato y'abaturage b'u Rwanda. Mbese, muri rusange ikarita y'icyiciro izaba ifite ukwibeshya nikoreshwa nyuma y'Ukwakira 2011 (ukwezi kwa nyuma kw'akazi ku isoko y'amakuru muri EICV ya 2010–2011) cyangwa nikoreshwa ku matsinda mato adahagarariye igihugu.

¹⁷ Ibi birakurikira kubera ko aya majanisha y'ubukene bwemejwe ku matsinda ni “linear functions” y'ibyemejwe bidafite amakosa 36 ku rugero ubukene buriho ku ngo.

Kwemeza urugero ubukene buriho mu ngo bifite ukuri kungana iki, turebye ukugenekereza kw'isano idahinduka iri hagati y'ibipimo n'ubukene mu gihe n'ukugenekereza kw'itsinda ry'inyigo rihagarariye u Rwanda nk'igihugu? Kugira ngo tubibone, ikarita y'icyiciro yakoreshejwe ku matsinda y'inyigo ku bantu 1,000 ku ngano ya $n = 16,384$ ikomotse ku itsinda ry'inyigo ryo gutanga agaciro. Uburyo bwa

Bootstrapping busobanura:

- Gushyira mu byiciro buri rugo mu itsinda ry'inyigo rihesha agaciro
- Gushushanya itsinda ry'inyigo *bootstrap* no gusimbura kuvuye mu itsinda ry'inyigo ritanga agaciro
- Kuri buri manota, kwandika urugero rw'ubukene nyarwo mu itsinda ry'inyigo bootstrap, ni ukuvuga, uruhare rw'ingo n'amanota ndetse n'ukugenekereza muni y'umurongo w'ubukene
- Kuri buri manota, kwandika ikinyuranyo kiri hagati y'urugero ubukene burihomu itsinda ry'inyigo bootstrap
- Gusubiramo intambwe eshatu inshuro 1,000
- Kuri buri manota, gutangaza icyegeranyo ku kinyuranyo hagati y'ingero zishoboka n'ingero z'ukuri ubukene buriho mu matsinda y'inyigo za bootstrap
- Kuri buri manota, gutangaza imyitangirizwa yo ku mpande ebyiri ifite ibinyuranyo bya 900, 950, na 990 mu cyeragati hagati y'ingero zishoboka n'ingero z'ukuri ubukene buriho

Kuri buri cyiciro cy'amanota no kuri $n = 16,384$, (ishusho ya 6), birerekana icyegeranyo ku kinyuranyo hagati y'ingero zishoboka n'ingero z'ukuri ubukene buriho.

Urugero rw'100% ry'umurongo w'igihugu, icyegeranyo cy'urugero ubukene burihomu matsinda y'inyigo bootstrap ku manota 30–34 mu itsinda ry'inyigo ryo guhesha agaciro kiri hasi cyane ku ijanisha ry'amanota 2.0. Ku manota 35–39, ikigereranyo kiri hasi cyane ku ijanisha ry'amanota 2.2.¹⁸

¹⁸ Ibi binyuranyo si zero, n'ubwo uwemeza afite ukuri, kubera ko ikarita y'icyiciro ikomoka ku matsinda yakozwe rimwe na rizima muri EICV ya 2010/11. Ikinyuranyo ku

Umwitangirizwa w'icyizere wa 90 ku ijana ku binyiranyo by'amanota 30–34 ni ijanisha ry'amanota ± 2.4 (100% ry'umurongo w'igihugu, ishusho ya 6). Ibi bisobanuye ko muri bootstraps 900 ku 1000, ikinyuranyo hagati y'umubare ugereranyije n'umubare w'ukuri kiri ku ijanisha ry'amanota hagati ya -4.4 na $+0.4$ kubera ko $-2.0 - 2.4 = -4.4$, na $-2.0 + 2.4 = +0.4$. Muri bootstraps 950 ku 1000 (95 ku ijana), ikinyuranyo kiri ku ijanisha ry'amanota -0.2 ± 3.0 , naho muri bootstraps 990 ku 1000 (99 ku ijana), ikinyuranyo kiri ku ijanisha ry'amanota -2.0 ± 4.0 .

Ibinyuranyo bibiri hagati y'urugero ubukene burihon'umubare nyawo mu ishusho ya 6 biri hejuru cyane. Hari ibinyuranyo kubera ko itsinda ry'inyigo rihesha agaciro ni itsinda rukumbi ry'inyigo, ku bw'ihindagurika ryo gukata ibice by'inyigo, mu igabana ritandukana n'iyubaka/iyegeranya ry'udutsinda tw'inyigo ndetse n'abaturage b'u Rwanda. Nyamara, ku irasantego, icy'ingenzi kiri muni y'ikinyuranyo kiri mu byiciro byose by'amanota kikanaba hejuru y'ibinyuranyo biri mu byiciro byose by'amanota, mbese hejuru no hasi y'aho irasantego rigarukira. Ibi bikumira ingaruka z'ukwibeshya n'ihindagurika ryo guca amatsinda y'inyigo mu irasantego (Friedman, 1997). Igice cya 8 kiri hasi kivuga birambuye ku ukuri kw'irasantego.

byegeranyo ku byiciro yari kuba zeru iyo EICV gukoreshwa inshuro nyinshi ku matsinda y'inyigo y'umubare wose w'abatursge b'u Rwanda hanyuma ikagabanywa mu dutsinda duto mbere yo gusubiramo igikorwa cyose cyo kubaka/guhuza no guha agaciro.

Ibirenzeho, niba ibyemejwe ku majanisha y'ubukene bw'amatsina bigomba ukuri ngo bibe ingenzi, birumvikana ko amakosa ku ngero zishoboka ubukene buriho mu ngo zitandukanye agomba angana. Nk'uko byavuzweho mu gice gikurikira, iyi ni impamvu muri rusange yo gukora amatsinda y'inyigo ahagararira igihugu.

Indi soko ishoboka y'ibinyuranyo hagati y'imibare yemejwe n'imibare nyayo ni ukutajyanisha. Ikarita y'icyiciro hano nta kwibeshya ifite, ahubwo ishobora gukomeza kudahuza mu gihe ikoreshejwe nyuma y'irangira ry'akazi ku isoko y'amakuru m'Ukawkoira 2011. Mu yandi magambo, ikarita y'icyiciro ishobora guhuza cyane n'amakuru ya EICV ya 2010–2011 ku buryo idakurura neza imiterere nyayo gusa, ahubwo byongeye utuyira twavuye kuri tombola ku buryo, bitewe n'uko amatsinda atandukanye, bigaragara gusa muri EICV ya 2010–2011 ariko atari ku baturage bose b'u Rwanda. Cyangwa ikarita y'icyiciro ishobora kudahuza kubera ko idafite ingufu mu gihe isano hagati y'ibipimo nimpinduka ku bukene mu gihe cyangwa mu gihe ikarita ikoreshejwe ku matsinda y'inyigo adahagarariye abatwage b'igihugu.

Ukudahuza gushobora kwirindwa habaho koroshya ikarita y'icyiciro no kutagarukira ku makuru gusa, ahubwo no guha agaciro ibyanditswe, uburambe, no gushishoza. Birumvikana ikarita y'icyiciro hano ikora ibi. Gufatikanya amakarita y'amanota bishobora kandi kugabanya ukudahuza, ku kiguzi cy'ubwinshi bunini.

Kwibeshya cyane ku rugero rw'imibereho ingo zitandukanye ziriho kuba kuringaniye mu bigereranyo ku majanisha y'ubukene mu matsinda ku matsinda y'inyigo ahagarariye igihugu (reba igice gikurikira). Byongeye, nibura bimwe mu binyuranyo mu masuzuma y'impinduka mu murongo w'igihebishobora kugira isoko itari ikarita y'icyiciro nk'impinduka mu isano hagati y'ibipimo n'ubukene, itandukana ry'amatsinda y'inyigo, impinduka mu mirongo y'ubukene, ukutagira ireme ku bwiza bw'amakuru mu murongo w'igihe, no kudashobora gushyira ikiguzi cy'imibereho ku murongo mu murongo w'igihe n'uw'ahantu hazwi ku isi. Izi mpamvu zishobora kuvugwa gusa mu kuvugurura iboneka, umuvuduko, ingano, n'ubwiza bw'amakuru atanzwe n'amabarura ku mibereho mu gihugu (risumbye ikoresha ry'ikarita y'icyiciro) cyangwa mu kugabanya ukudahuza (bitanga umusaruro ufite aho ugarukira, turebye ubukungu bw'ikarita y'icyiciro).

6. Kwemeza ijanisha ry'ubukene buriho mu itsinda mu gihe runaka

Ijanisha ry'ubukene bwemejwe mu itsinda mu gihe runaka ni icyegeranyo cy'urugero ubukene buriho mu ngo zitandukanye zigize itsinda.

Mu kubyerekana, dufate ko umuryango watoranyije ingo 3 ku nyigo kuwa 1 Mutarama 2016 hanyuma zigahabwa amanota angana na 20, 30, na 40, ahwanye n'urugero ubukene burihoku ijanisha rya 71.2, 50.2, na 27.7 ku ijana (100% ry'umurongo w'igihugu, ishusho ya 4). Icyegeranyo kigereranyije ku bukene buriho mu itsinda ni icyegeranyocyo hagati ku bukene buriho mu ngo kingana na $(71.2 + 50.2 + 27.7) \div 3 = 49.7$ ku ijana.

Mubyitondere; ijanisha ry'ubukene mu itsinda *si* ubukene buriho bufatanyijwe n'icyegeranyo cy'amanota. Aha, icyegeranyo cy'amanota yo hagati ni 30, ahuye nurwego ubukene buriho bwa 50.2 ku ijana. Ibi bitandukanye na 49.7 ku ijana byabonetse nk'icyegeranyo cy'ubukene bw'ingo eshatu buriho byegeranyijwe na buri manota muri atatu bahawe. Bitandukanye n'urugero ubukene buriho, amanota ni ibimenyetso bisanzwe, nk'inyuguti z'ururimi cyangwa amabara. Kubera ko imyanya itari imibare ibarika, ntishobora guteranywa ngo ibe ifite icyo ivuze cyangwa ngo igaragazwe ku cyegeranyo kivuye mu ngo. Ibikorwa bitatu gusa birashoboka mu guha imyanya y'amanota agaciro: kuyihindura mu nego ubukene buriho, isesengura ry'igabanya (Schreiner, 2012a), cyangwa igereranya—iyo byifuzwa—hamwe

n’umurongo ntarengwa ku irasantego. Amabwiriza yizewe yo gukurikiza ni: Koresha buri gihe ingero ubukene buriho, wibagirwe gukoresha imyanya.

Abagikoresha ikarita y’icyiciro ishaje ya 2005–2006 bifashisha inshyashya ya 2010–2011 kandi bashaka kubika ibigereranyo ku majanisha y’ubukene buriho mu gupima impinduka mu gihebashobora kubikora uku bifashishije umurongo w’intangiriro wo ku ikarita y’icyiciro ya 2005–2006 n’ikurukiranabikorwa ryo ku ikarita y’icyiciro nshya ya 2010–2011.

6.1 Ukuri ku majanisha y’ubukene bigereranyijwe mu gihe runaka

Ku ikarita nshya y’amanota ya 2010–2011 yakoreshejwe y’u Rwanda yakoreshejwe ku bootstraps 1,000 za $n = 16,384$ zikuwe mu itsinda ry’inyigo ryo guhesha agaciro n’100% ry’umurongo w’ubukene w’igihugu, icyegeranyo cy’ikinyuranyo hagati y’ijanisha ry’ubukene kigereranyijwe mu gihe runaka n’icyegeranyo cy’ukuri kiri ku ijanisha ry’amanota +0.4 (ishusho ya 8, mu ncamake y’ishusho ya 7 ku mirongo y’ubukene). Mu mirongo 10 y’ubukene mu itsinda ry’inyigo rihesha agaciro, ikinyuranyo cyihariye cyo hejuru kiri ku ijanisha ry’amanota 2.2, hanyuma icyegeranyo cyihariye cy’ikinyuranyo kiri ku ijanisha ry’amanota hafi 1.1. Nibura igice cy’ibyo binyuranyo gikenewe mu kubaka amatsinda y’inyigo atandukanye mu kugabanya EICV ya 2010–2011 mo udutsinda 2 duto tw’inyigo.

Mu gihe cyo kugereranya ijanisha y'ubukene mu gihe runaka, amakosa agaragara ku shusho ya 8 yagombye gukurwa mu cyegeranyo cy'urugero rushoboka z'ubukene buriho kugira ngo igereranya ritazamo amakosa. Ku rugero rw'ikarita nshya y'amanota ya 2010–2011 y'u Rwanda n100% ry'umurongo w'igihugu mu itsinda ry'inyigo rihesha agaciro, amakosa ari ku ijanisha ry'amanota +0.4 ku ijana, bityo ikigereranyo cy'ukuri mu rugero rw'ingo 3 ruri hejuru ni $49.7 - (+0.4) = 49.3$ ku ijana.

Mrwego rwo guhamya ukuri, 90 ku ijana by'umwitangirizwa w'icyizere ku cyegeranyo cy'ubukene bwemejwe ku itsinda mu gihe runaka hamwe na $n =$ ingo 16,384 ni ijanisha ry'amanota ± 0.8 cyangwa byiza ku mirongo yose (ishusho ya 8). Ibi bivuga ko muri *bootstraps* 900 ku 100 muri iyi ngano, ikigereranyo (amakosa amaze gukurwamo) kiri ku ijanisha ry'amanota 0.8 y'umubare w'ukuri.

Urugero, dufate icyegeranyo cy'urugero ubukene buriho mu itsinda ry'inyigo ya $n = 16,384$ ku ikarita y'icyiciro y'u Rwanda n'100% ry'umurongo w'igihugu ari 49.7 ku ijana. Ikigereranyo muri 90 ku ijana by'ayo matsinda byari biteganyijwe ko bijya mu cyiciro ya $49.7 - (+0.4) - 0.8 = 48.5$ ku ijana kugera kuri $49.7 - (+0.4) + 0.8 = 50.1$ ku ijana, hamwe n'umubare wo hejuru w'ukuri uhwanyeye n'ikigereranyo cy'ukuri mu cyiciro cyo hagati, ni ukuvuga $49.7 - (+0.4) = 49.3$ ku ijana. Ibi ni ukubera ko ikigereranyo cyabanje (gidafite ukuri) kiri kuri 49.7 ku ijana, ukwibeshya kuri ku ijanisha ry'amanota +0.4, na 90 ku ijana by'umwitangirizwa w'ikizere ku 100% ry'umurongo w'igihugu mu itsinda ry'inyigo rihesha agaciro, ingano y'iri tsinda iri ku ijanisha ry'amanota ± 0.8 (ishusho ya 8).

6.2 Inzira ku kwibeshya gusanze ku majanisha y'ubukene

Ni gute ibyemejwe bigera ku kuri mu gihe runaka? Kubera ko ibyo byemejwe ari ibyegeeranyo, bifite (mu matsinda y'inyigo “manini”) igabanya risanzwe kandi bishobora kuba bigizwe n'ikinyuranyo cyabyo ku cyegeranyo ku mibare y'ukuri (*kwibeshya*), byose hamwe n'ukwibeshya kwabyo gusanze (*ukuri*).

Schreiner (2008a) atanga igitekerezo ku buryo bwo gukomora inzira zigaragaza ukwibeshya gusanze ku majanisha y'ubukene byagereranyijwe mu gihe runaka bivuye ku ipima ritaziguye binyuze ku ikarita y'icyiciro cy'ubukene busanzwe. Biratangirana n'igitabo cya Cochran's (1977) kirimo inzira, $\pm c = \pm z \cdot \sigma$ ifitanye isano nimyitangirizwa w'icyizere, hamwe nukwibeshya gusanzewemu buryo ipima riziguye ry'isano aho:

$\pm c$ ari umwitangirizwa w'ikizere nk'umugabane (urugero, 0.02 ku ijanisha ry'amanota ± 2),

z ikomoka ku igabanya risanzwe kandi ni $\begin{cases} 1.04 \text{ ku rwego rw' icyizere cya } 70 \text{ ku ijana} \\ 1.28 \text{ ku rwego rw' ikizere cya } 80 \text{ ku ijana} \\ 1.64 \text{ ku rwego rw' ikizere cya } 90 \text{ ku ijana} \end{cases}$,

σ ni ukwibeshya gusanze kw'icyegeranyo cyubukene bwagereranyijwe,

$$\text{ibi ni, } \sqrt{\frac{\hat{p} \cdot (1 - \hat{p})}{n}} \cdot \phi,$$

\hat{p} ni umugabane w'ingo zigereranyijwe muni y'umurongo w'ubukenu mu matsinda ry'inyigo,

ϕ ni igikubisho gikosoye cy'abantu bazwi $\sqrt{\frac{N - n}{N - 1}}$,

N ni ingano y'abarebwa n'inyigo bese, na

n ni ingano y'amatsinda y'inyigo.

Urugero, EICV y'u Rwanda ya 2010–2011 itanga ikigereranyo cy'ipima kiziguye cy'ijanisha ry'ubukene bubariwe ku rugo ku 100% ry'umurongo w'igihugu mu itsinda ry'inyigo rihesha agaciro rya $\hat{p} = 40.2$ ku ijana (ishusho ya 1). Niba iri gereranya ryakomotse ku itsinda ry'inyigo $n =$ ingo 16,384 zakuwe mu bantu N ingana na 2,252,844 (umubare w'ingo mu Rwanda muri 2010–2011 nk'uko bigaragara mu ngano z'amatsinda ya EICV), hanyuma ikosora ry'abantu bazwi ϕ ni $\sqrt{\frac{2,252,844 - 16,384}{2,252,844 - 1}} = 0.9964$ byegereye $\phi = 1$. Niba urwego rw'ikizerecyifuzwa ar 90kujana ($z = 1.64$), aha umwitangirizwa w'ikizere $\pm c$ ni

$$\pm z \cdot \sqrt{\frac{\hat{p} \cdot (1 - \hat{p})}{n}} \cdot \sqrt{\frac{N - n}{N - 1}} = \pm 1.64 \cdot \sqrt{\frac{0.402 \cdot (1 - 0.402)}{16,384}} \cdot \sqrt{\frac{2,252,844 - 16,384}{2,252,844 - 1}} = \text{ijanisha}$$

ry'amanota ± 0.624 . (Niba ϕ yarafashwe nka 1, hanyuma umwitangirizwa ukaba ijanisha ry'amanota ± 0.628 .)

Ikarita y'icyiciro cy'ubukene, nyamara, ntipima ubukene ku buryo buziguye, bityo iyi nzira ntikoreshwa. Kugira ngo ukomere inzira ku ikarita y'icyiciro y'u Rwanda, ha agaciro ishusho ya 7, gitangaza umwitangirizwa w'icyizere $\pm c$ ku binyuranyo nk'uko ikarita y'icyiciro yakoreshejwe ku *bootstraps* 1,000 z'ingano zitandukanye zakuwe mu itsinda ry'inyigo ihesha agaciro. Urugero, na $n = 16,384$ hamwe n'100% ry'umurongo w'igihugu mu itsinda ry'inyigo rihesha agaciro, 90 ku ijana by'umwitangirizwa w'icyizere riri ku ijanisha ry'amanota ± 0.782 .¹⁹

¹⁹ Bitewe no kuburungushura, Ishusho ya 7 irerekana 0.8, si 0.756.

Bityo, 90 ku ijana by'umwitangirizwa w'ikizere na $n = 16,384$ ni ijanisha ry'amanota ± 0.782 ku ikarita y'icyiciro y'u Rwanda n'ijanisha ry'amanota ± 0.624 ku ipima riziguye. Isano y'imyitangirizwa 2 ni $0.782 \div 0.624 = 1.25$.

Ubu noneho turebe umwitozo bisa, ariko na $n = 8,192$. Umwitangirizwa w'icyizere gisobanuye mu ipima riziguye, hamwe n'100% ry'umurongo w'igihugu mu

$$\text{itsinda ry'inyigo rihesha agaciro ni } \pm 1.64 \cdot \sqrt{\frac{0.402 \cdot (1 - 0.402)}{8,192}} \cdot \sqrt{\frac{2,252,844 - 8,192}{2,252,844 - 1}} =$$

ijanisha ry'amanota ± 0.887 . Umwitangirizwa w'icyizere gisobanuye n'ikarita y'icyiciro cy'ubukene y'u Rwanda (ishusho ya 7) ni ijanisha ry'amanota ± 1.142 . Bityo, kuri $n = 8,192$, isano y'imyitangirizwa 2 ni $1.142 \div 0.887 = 1.29$.

Iyi sano ya 1.29 kuri $n = 8,192$ ihabanye cyane n'isano ya 1.25 kuri $n = 16,384$. Mu ngano z'amatsinda yose y'inyigo 256 cyangwa menshi mu shusho ya 7, aya masano muri rusange aruzuzanya, n'icyegeranyo cy'amasano mu itsinda rihesha agaciro bihinduka 1.23 (ishusho ya 8), byerekana ko umwitangirizwa w'ikizere ku bigereranyo bitaziguye ku majanisha y'ubukene bikorewe ku ikarita y'icyiciro y'u Rwanda n'100% ry'umurongo w'ubukene bihagarariye ingano y'amatsinda runaka ry'inyigo—ngari hafi ku ngano ya 23 ku ijana kurusha umwitangirizwa w'ikizere ku bigereranyo binyuze kuri EICV 2010–2011.

Iri 1.23 rigaragara mu shusho ya 8 “nk’igikubisho ” kubera ko iyo $\alpha = 1.23$, inzira y’imyitangirizwa y’icyizere c ku ikarita y’icyiciro cy’ubukene y’u Rwanda ni

$\pm c = \pm z \cdot \alpha \cdot \sigma$. Ni ukuvuga, inzira k’ukwibeshya gusanze α mu gihe runaka,

ibigereranyo ku majanisha y’ubukene bihawe amanota ni $\alpha \cdot \sqrt{\frac{\hat{p} \cdot (1 - \hat{p})}{n}} \cdot \sqrt{\frac{N - n}{N - 1}}$.

Muri rusange α ishobora kuba nini cyangwa ntoya kuri 1.00. Mu gihe α ari ntoya kuri 1.00; biba bivuze ko ikarita y’icyiciro ifite ukuri gutougereranyije n’ipima riziguye. Bihinduka iyo α ari nini kuri 1.00; ku mironko yose 10 y’ubukene mu shusho ya 8.

Inzira irebana n’imyitangirizwa y’icyizere hamwe n’ukwibeshya gusanze ku gushyira mu byiciro ku bukene ishobora gusubirwamo igatanga indi nzira yerekana ingano y’amatsinda y’inyigo mbere y’ipima. Niba \tilde{p} ari ijanisha ry’ubukene gitegerejwe, hanyuma inzira y’ingano y’amatsinda y’inyigo n yakuwe mu bantu bose aribo N ibi bishingira ku ngano yifuzwa y’icyizere ingana na z , umwitangirizwa w’icyizere wifuzwa

$\pm c$ ni $n = N \cdot \left(\frac{z^2 \cdot \alpha^2 \cdot \tilde{p} \cdot (1 - \tilde{p})}{z^2 \cdot \alpha^2 \cdot \tilde{p} \cdot (1 - \tilde{p}) + c^2 \cdot (N - 1)} \right)$. Niba umubare w’abantu bose N ari

“munini” bihuye n’ingano y’amatsinda y’inyigo n , aha igikubisho cy’ikosora ϕ

gishobora gufatwa nka rimwe (1), kandi inzira igahinduka $n = \left(\frac{\alpha \cdot z}{c} \right)^2 \cdot \tilde{p} \cdot (1 - \tilde{p})$.

Mu kugaragaza uko bikoreshwa, dufate ko umubare w’abantu bose N ari 2,252,844 (umubare w’ingo mu Rwanda muri 2010/11), dufate $c = 0.06132$, $z = 1.64$ (90 ku ijana by’icyizere), n’umurongo w’umukene w’ingenzi ari 100% ry’umurongo w’igihugu bityo ijanisha ry’ubukene gitegerejwe gifite icyo kivuze \tilde{p} ni ijanisha

ry'ubukene buriho mu Rwanda hose, uwo murongo ni muri 2010–2011, (40.2 ku ijana tubariye ku rugo, ishusho ya 1). Igikubisho α ni 1.23 (ishusho ya 8). Hanyuma ingano y'ingano y'amatsinda igatanga:

$$n = 2,252,844 \cdot \left(\frac{1.64^2 \cdot 1.23^2 \cdot 0.402 \cdot (1 - 0.402)}{1.64^2 \cdot 1.23^2 \cdot 0.402 \cdot (1 - 0.402) + 0.06132^2 \cdot (2,252,844 - 1)} \right) = 261,$$

kegeranye cyane n'ingano y'amatsinda y'inyigo 256 yitegerejwe mu shusho ya 7 ku 100% ry'umurongo w'igihugu. Mu gufata igikubisho cy'ikosora ry'umubare w'abantu

$$\text{bose uzwi } \phi \text{ nka (1) bitanga igisubizo kimwe, uku } n = \left(\frac{1.23 \cdot 1.64}{0.06132} \right)^2 \cdot 0.402 \cdot (1 - 0.402) = 261.^{20}$$

Birumvikana, ibikubisho α mu shusho ya 8 birihariye ku Rwanda, imirongo y'ubukene bwarwo, ibyegeranyo byarwo ku bukene n'ikarita yarwo ku miterere y'ubukene. Aho inzira zituruka k'ukwibeshya gusanzwe hakoreshejwe ibikubisho α , nyamara, harasobanutse ku ikarita iyo ari yo yose y'icyiciro cy'ubukene hakurikijwe uburyo bwo muri iyi nyandiko.

²⁰ Nubwo USAID itagaragaje inzego z'icyizere cyangwa se umwitangirizwa, ikigo IRIS Center (2007a na 2007b) kivuga ko ingano y'amatsinda ya $n = 300$ ihagije kuri raporo za USAID. Abafatanyabikorwa bato ba USAID mu Rwanda bashobora gutanga raporo bakoresheje umurongo w'idolari \$1.25 ku munsu. Tubonye igikubisho α cya 1.08 kuri uyu murongo muri 2010/11 (ishusho ya 8), ijanisha ry'ubukene ritaganyijwe ku rugo mbere y'ipima rya 57.3 ku ijana (ijanisha mu Rwanda hose muri 2010/11, ishusho ya 1), n'urwego rw'icyizere rwa 90 ku ijana ($z = 1.64$), hanyuma $n = 300$ izana

umwitangirizwa w'icyizere w'ijanisha ry'amanota $\pm 1.64 \cdot 1.08 \cdot \sqrt{\frac{0.573 \cdot (1 - 0.573)}{300}} = \pm 5.1$.

Mu bikorwa bya nyuma y'akazi ku isoko y'amakuru muri EICV m'Ukwakira 2011, gahunda yashoboraga umurongo w'ubukene (tuvuge, 100% ry'umurongo w'igihugu), dufate ingano y'abagenerwabikorwa bayo bose (urugero, $N =$ abagenerwabikorwa 10,000), dutore urugero rw'icyizere rwifuzwa (tuvuge 90 ku ijana, cyangwa $z = 1.64$), dutore umwitangirizwa w'icyizere wifuzwa (tuvuge ijanisha ry'amanota ± 2.0 , cyangwa $c = \pm 0.02$), cyangwa tugenekereze ibyerekeye \bar{p} (wenda dushingiye ku bipimo biheruka nk'ijanisha ry'ubukene habazwe ku rugo ku 100% ry'umurongo w'igihugu ku Rwanda, 40.2 ku ijana muri EICV ya 2010–2011 mu shusho ya 1), turebe α (hano, 1.23 mu shusho ya 8), duteganye ko ikarita y'icyiciro izakomeza gukora mu gihe kizaza no ku dutsinda tudahagarariye igihugu,²¹ hanyuma kandi tubare ingano y'amatsinda ya ngombwa. Muri aha byerekanwe,

$$n = 10,000 \cdot \left(\frac{1.64^2 \cdot 1.23^2 \cdot 0.402 \cdot (1 - 0.402)}{1.64^2 \cdot 1.23^2 \cdot 0.402 \cdot (1 - 0.402) + 0.02^2 \cdot (10,000 - 1)} \right) = 1,966.$$

²¹ Iyi nyandiko iravuga ko ireme ry'ikarita y'icyiciro rikoreshejwe ahantu hasanzwe hatandukanye, ariko idashobora gusuzuma ireme mu myaka iri imbere cyangwa ku matsinda mato. Ukuri nyuma y'Ukwakira 2011 kuzaba gusa n'uko muri EICV 2010/11 hamwe no guta agaciro mu murongo w'igihe mu buryo isano hagati y'ibipimo n'urugero ubukene buriho ihinduka.

7. Ibigereranyo by'impinduka mu majanisha y'ubukene mu gihe runaka

Impinduka ku ijanisha ry'ubukene mu itsinda hagati y'ibihe runaka bibiri igereranywa nk'impinduka mu cyegeranyo cy'ubukene buriho mu ngo mu itsinda.

Ku bipimo bimwe na bimwe byo ku ikarita y'icyiciro nshya, amagambo cyangwa ibisubizo bishoboka muri EICV ya 2005–2006 bitandukanye n'ibyo muri EICV ya 2010–2011. Ibi bibuza ikoreshwa ry'ikarita nshya ya 2010–2011 ku makuru ya EICV ishaje ya 2005–2006. Nyamara, iyi nyandiko ntishobora kugenzura ireme ry'ibigereranyo by'impinduka mu gihe runaka ku Rwanda, kandi ishobora gusa gutanga ibitekerezo ku nzira zenda kuba zo k'ukwibeshya gusanzwe. Ariko rero, amagambo y'ingenzi aha yerekanwe kubera ko, mu ngiro, imiryango ifasha abakene mu turere mu Rwanda ishobora gukoresha ikarita mu gukusanya amakuru yayo ubwayo no gupima impinduka mu gihe.

7.1 Icyitonderwa: Impinduka si ingaruka

Gushyira mu byiciro bishobora kugereranya impinduka. Birumvikana, ubukene bwashobora kugabanuka cyangwa kwiyongera, kandi gushyira mu byiciro ntibivuga ko ikibutera gihindutse. Akenshi iyi ngingo iribagirabana cyangwa ikitiranywa, bityo isubirwamo: gushyira mu byiciro by'ubukene muri make bigereranya impinduka.

By'umwihariko, kugereranya ingaruka zo kugira uruhare bisaba kumenya icyakabaye cyarakozwe ku bagenerwabikorwa iyo bataza kuba abagenerwabikorwa. Kumenya ibi

bisaba ibisubizo bigenekererejwe bifite ingufu cyangwa kwigenzura kw'itsinda rihuza abagenerwabikorwa mu buryo bwo uretse kugira uruhare. Mu gutesha agaciro ingingo, gushyira mu byiciro by'ubukene bishobora gufasha kugereranya ingaruka z'uruhare mu gihe cyonyine hari inzira zimwe na zimwe zo kumenya—cyangwa ibigenekerezo bisobanutse birebana—n'uko byari bugende iyo hatabaho uruhare. Kandi ayo makuru agomba gukomoka ahandi hatari mu byiciro by'ubukene.

7.2 Kugereranya impinduka mu majanisha y'ubukene mu gihe runaka

Twibuke inzira zatangiye mu gice kibanziriza iki. Kuwa 1 Mutarama 2016, ikigo cyakoze itsinda ry'ingo eshatu zahawe amanota 20, 30, na 40 ndetse n'urugero ubukene buriho rwa 71.2, 50.2, na 27.7 ku ijana (100% ry'umurongo w'igihugu, ishusho ya 4). Gushyira ku murongo amakosa mu guha itsinda agaciro k'ijanisha ry'amanota +0.4 (ishusho ya 8), ijanisha ry'ubukene ryemejwe ku itsinda mu ntangiriro ni icyegeranyo cy'ubukene buriho mu ngo cya $[(71.2 + 50.2 + 27.7) \div 3] - (+0.4) = 49.3$ ku ijana.

Nyuma y'umurongo watangiriweho, uburyo bubiri bwo guca amatsinda y'inyigo burashoboka kugira ngo habeho ikurikiranabikorwa hose:

- Guha amanota itsinda rishya, hapimwa impinduka mu matsinda y'inyigo
- Guha amanota rya tsinda ku murongo watangiriweho n o ku ikurikiranabikorwa

Mu buryo bwo kubigaragaza, dufate ko nyuma y'imyaka ibiri kuwa 1 Mutarama 2018, umuryango waciye itsinda ry'izindi ngo eshatu nazo zikuwe muri ba bantu bose ingo za mbere zavuyemo (cyangwa dufate ko za ngo eshatu zo ku ikubitiro zongeye

gubahwa amanota bwa kabiri) hanyuma tubone ko amanota yazo ari 25, 35, na 45 (ubukene bushoboka kuri 63.0, 34.7, na 17.0 ku ijana, 100% ry’umurongo w’igihugu, ishusho ya 4). Kuringaniza ku makosa azwi, icyegeranyo gishoboka ubukene buriho ku ikurikiranabikorwa ni $[(63.0 + 34.7 + 17.0) \div 3] - (+0.4) = 37.8$ ku ijana, iterambere rya $49.3 - 37.8 =$ ijanisha ry’amanota 11.5.²²

Noneho, hafi umugenerwabikorwa umwe ku icyenda muri uru rugero rugenekereza igisubizo mu murongo w’ubukene muri 2016–2018.²³ Muri abo batangiriye munsu y’umurongo, hafi umwe kuri bane ($11.5 \div 49.3 = 23.3$ ku ijana) ku mpera bari hejuru y’umurongo.²⁴

7.3 Uguhama ibigereranyo by’impinduka mu matsinda abiri y’inyigo

Ku matsinda abiri angana yigenga, inyurabwenge imwe nko mu gice kirangiye ishobora gukoreshwa mu gukora inzira yerekeye umwitangirizwa w’icyizere $\pm c$ n’ukwibeshya gusanze. Ku cyigereranyo cy’impinduka mu majanish y’ubukene ku ikarita y’icyiciro cy’ubukene mu gihe runaka:

$$\pm c = \pm z \cdot \sigma = \pm z \cdot \alpha \cdot \sqrt{\frac{2 \cdot \hat{p} \cdot (1 - \hat{p})}{n}} \cdot \sqrt{\frac{N - n}{N - 1}}.$$

²² Birumvikana, iri gabanuka rinini mu bukene mu myaka ibiri ntirishoboka, ariko uru ni urugero rwo kwerekana uburyo icyiciro cy’ubukene gishobora gukoreshwa mu kwemeza impinduka.

²³ Iyi ni ishusho nyayo; bamwe batangirira hejuru y’umurongo bagasoreza munsu yawo, ku bandi bikaba imbusane.

²⁴ Gushyira ubukene ku cyiciro ntibyerekana impamvu z’iyi mpinduka.

Aha, z , c , \hat{p} na N bisobanuye nko hejuru, n ni ingano y'amatsinda y'inyigo hombi ku murongo watangiriweho no mu ikurikiranabikorwa,²⁵ na α ni icyegeranyo (mu cyiciro cy'amatsinda y'inyigo ya *bootstraps* y'ingano z'amatsinda zitandukanye) cy'ikigabanya cy'umwitangirizwa w'icyizere cyitegerejwe ku ikarita y'icyiciro cy'ubukene n'umwitangirizwa w'icyizere kizwi munsu y'ipima riziguye.

Nka mbere, inzira k'ukwibeshya gusanzwe ishobora gusubirwamo igatanga inzira ku ngano z'amatsinda imbere y'ipima ritaziguye binyuze ku ikarita y'icyiciro cy'ubukene, aho \tilde{p} iri mu bipimo bibanza kandi yemejwe ko ingana hombi ku murongo watangiriweho no mu ikurikiranabikorwa:

$$n = 2 \cdot N \cdot \left(\frac{z^2 \cdot \alpha^2 \cdot \tilde{p} \cdot (1 - \tilde{p})}{z^2 \cdot \alpha^2 \cdot \tilde{p} \cdot (1 - \tilde{p}) + c^2 \cdot (N - 1)} \right). \text{ Niba } \phi \text{ ishobora gufatwa nka rimwe,}$$

$$\text{noneho inzira irahinduka } n = 2 \cdot \left(\frac{\alpha \cdot z}{c} \right)^2 \cdot \tilde{p} \cdot (1 - \tilde{p}).$$

Iyi α yapimwe ku bihugu 11 (Schreiner, 2015b, 2015c, 2013a, 2013b, 2012c, 2010b, 2009a, 2009b, 2009c, 2009d; na Chen na Schreiner, 2009). Icyegeranyo cyoreshye cya α mu bihugu—nyuma yo gupima icyegeranyo cya α ku mirongo y'ubukene n'amabarura mu myaka itandukanye muri buri gihugu—ni 1.04. Ikyi shusho ikomeye isobanutse nk'indi yose wakoresha ku Rwanda.

Mu kwerekana ikoresha ry'iyi nzira kugira ngo hemezwe ingano y'itsinda ku kwemeza impinduka mu majanisha y'ubukene ku matsinda y'inyigo abiri yigenga, dufate

²⁵ Ibi bivuga ko—uguhamya kwatanzwe—kwemeza impinduka mu ijanisha ry'ubukene hagati y'ibihe bibiri bisaba inshuro enye amapima menshi (akenshi si kabiri) angana n'ijanisha ry'ubukene bwemejwe mu gihe runaka.

urwego rwifuzwaho icyizere ko ari 90 ku ijana ($z = 1.64$), umwitangirizwa w'icyizere wifuzwa ni ijanisha ry'amanota ± 2 , ($\pm c = \pm 0.02$), umurongo w'ubukene ni 100% ry'umurongo w'igihugu, $\alpha = 1.04$, $\hat{p} = 0.402$ (ijanisha ry'ubukene ku rugo muri 2010–2011 ku 100% ry'umurongop w'igihugu mu ishusho ya 1), n'umubare wose w'inyigo N ni munini bihagije bifitanye isano n'ingano itegerejwe y'amatsinda n ku buryo ikosora ry'umubare uzwi wose w'inyigo ϕ rishobora gufatwa nka rimwe. Hanyuma ingano y'amatsinda ku murongo watangiriweho ni $n = 2 \cdot \left(\frac{1.04 \cdot 1.64}{0.02} \right)^2 \cdot 0.402 \cdot (1 - 0.402) \cdot 1 = 3,497$, naho ingano y'amatsinda y'ikurikiranabikorwa nayo ni 3,497.

7.4 Guhamya impinduka yemejwe ku itsinda rimwe, rihawe amanota kabiri

Bisa n'uburyo bw'ikomoka buheruka, inzira rusange irebana n'umwitangirizwa w'icyizere $\pm c$ k'ukwibeshya gusanzwe σ mu gihe cy'ikoreshwa ry'ikarita y'icyiciro cy'ubukene mu kwemeza impinduka ku itsinda rimwe rukumbi ry'ingo, zose muri ryo zahawe amanota mu bihe bibiri bitandukanye, ni:²⁶

$$\pm c = \pm z \cdot \sigma = \pm z \cdot \alpha \cdot \sqrt{\frac{\hat{p}_{12} \cdot (1 - \hat{p}_{12}) + \hat{p}_{21} \cdot (1 - \hat{p}_{21}) + 2 \cdot \hat{p}_{12} \cdot \hat{p}_{21}}{n}} \cdot \sqrt{\frac{N - n}{n - 1}},$$

aho z , c , α , N , na n zisobanurwa nk'ibisanzwe, \hat{p}_{12} ni uruhare rw'ingo zose zo mu itsinda zavuye muni y'umurongo w'ubukene zikagera hejuru yawo, na \hat{p}_{21} ikaba uruhare

²⁶ Reba McNemar (1947) na Johnson (2007). John Pezzullo yafashije kubona inzira.

rw'ingo zose zashyizwe mu itsinda zavuye hejuru y'umurongo w'ubukene zikagera muni yawo.

Inzira ku myitangirizwa y'icyizere ishobora gusubirwamo kugira ngo itange inzira ku ngano y'amatsinda mbere y'ipimwa. Ibi bisaba ukwemeza gutegerejwe (gushingiye ku makuru ahari mbere y'ipima) k'uruhare rw'ingo zambukiranyije umurongo \tilde{p}_{12} and \tilde{p}_{21} . Mbere y'ipimwa, ikigenekerezo kitahindutse ni uko impinduka mu ijanisha ry'ubukene izaba zero a, izana $\tilde{p}_{12} = \tilde{p}_{21} = \tilde{p}_*$, itanga:

$$n = 2 \cdot \left(\frac{\alpha \cdot z}{c} \right)^2 \cdot \tilde{p}_* \cdot \sqrt{\frac{N - n}{n - 1}}.$$

Kubera ko \tilde{p}_* ishobora kuba icyo ari cyose kiri hagati ya 0 na 0.5, amakuru menshi arakenewe kugira ngo iyi nzira ikoreshwe. Dufate ko isano yitegerejwe hagati ya \tilde{p}_* , umubare w'imyaka y hagati y'umurongo w'intangiriro n'ikurikiranabikorwa, na $p_{\text{mbere y'umurongo w'intangiriro}} \cdot (1 - p_{\text{mbere y'umurongo w'intangiriro}})$ uri—nko muri Peru (Schreiner, 2009e)—bugufi kuri:

$$\tilde{p}_* = -0.02 + 0.016 \cdot y + 0.47 \cdot [p_{\text{mbere y'umurongo w'intangiriro}} \cdot (1 - p_{\text{mbere y'umurongo w'intangiriro}})].$$

Tumaze kubona ibi, inzira ikoreshwa ku ngano y'amatsinda y'inyigo ku itsinda ry'ingo zahawe amanota inshuro ebyiri n'ikarita y'icyiciro y'u Rwanda (bwa mbere nyuma y'Ukwakira 2011, n'indi nshuro nyuma yaho) ni

$$n = 2 \cdot \left(\frac{\alpha \cdot z}{c} \right)^2 \cdot \{ [-0.02 + 0.016 \cdot y + 0.47 \cdot [p_{\text{mbere y'umurongo w'intangiriro}} \cdot (1 - p_{\text{mbere y'umurongo w'intangiriro}})]] \} \cdot \sqrt{\frac{N - n}{n - 1}}$$

Muri Peru (isoko rukumbi y'amakuru iyemeza rishingiyeho, Schreiner, 2009e), icyegeranyo α mu myaka no mu mirongo y'ubukene ni hafi 1.30.

Kugira ngo herekanwe ikoresha ry'iyi nzira, dufate ko urwego rw'ikizere rwifuzwa ari 90 ku ijana ($z = 1.64$), umwitangirizwa w'icyizere cyifuzwa ni ijanisha ry'amanote ± 2.0 ($\pm c = \pm 0.02$), umurongo w'ubukene ni 100% ry'umurongo w'igihugu, itsinda rizabanza rihabwe amanota muri 2016 no hanyuma muri 2019 ($y = 3$), n'umubare wose w'inyigo ni N ni munini bifitanye isano n'ingano y'amatsinda y'inyigo itegerejwe n , ko ikosora ry'umubare uzwi w'inyigo ϕ rishobora gufatwa nka rimwe.

Ijanisha ry'ubukene mbere y'umurongo w'intangiriro $p_{2010/11}$ ryafashwe nka 40.2 ku ijana (ishusho ya 1), na α igenekerewa kuba 1.30. Noneho ingano y'amatsinda y'umurongo

$$\text{w'intangiriro ni } n = 2 \cdot \left(\frac{1.30 \cdot 1.64}{0.02} \right)^2 \cdot \{-0.02 + 0.016 \cdot 3 + 0.47 \cdot [0.402 \cdot (1 - 0.402)]\} \cdot 1 =$$

3,205. Itsinda rimwe ry'ingo 3,205 ryahawe amanota mu ikurikiranabikorwa.

8. Irasantego

Igihe ikigo runaka gikoresha ubukene mu gushyira mu byiciro hifashishijwe imirimo igamije gukorwa n’abakiliya mu irasantego, ingo ziri mu cyiciro kiri hejuru cyangwa hasi y’igipimo ngenderwaho ku irasantego ryemejwe kandi kigafatwa—hashingiwe ku mpamvu za gahunda—nk’aho zaba ziri muni y’umurongo w’ubukene watanze. Ingo ziri mu cyiciro cyo hejuru y’igipimo ngenderwaho ku irasantego ryemejwe kandi kigafatwa—hashingiwe ku mpamvu za gahunda—nk’aho zaba ziri hejuru y’umurongo w’ubukene watanze.

Hari itandukaniro hagati y’imiterere y’irasantego (gushyirwa ku cyiciro cyo cyangwa hasi y’igipimo ngenderwaho ku irasantego) n’imiterere y’ubukene (kuba ukoresha ibiri muni y’umurongo w’ubukene). Imiterere y’ubukene ni igikorwa gisobanurwa ko ibikoreshwa biri muni y’umurongo w’ubukene ku buryo butaziguye biciye mu bushakashatsi. Ku rundi ruhande, imiterere y’irasantego ni uburyo ikigo gihitamo bitewe n’umurongo ngenderwaho ndetse n’igereranya ku buryo buziguye hashingiwe ku ikarita y’ibyiciro.

Irasantego rigerwaho ku buryo bwuzuye igihe ingo ziri muni y’umurongo w’ubukene koko zakoreweho ubushakashatsi (ziri mu zakoreweho) kandi ingo ziri hejuru y’umurongo w’ubukene koko zitakoreweho ubushakashatsi (zitari mu zakoreweho). Niyo mpamvu, nta karita y’ibyiciro kamara ibaho, kandi irasantego riba ritagezweho igihe ingo koko ziri muni y’umurongo w’ubukene zitakozweho ubushakashatsi

(ubutagerwaho) cyangwa igihe ingo ziri koko hejuru y’umurongo w’ubukene zakozweho (igerwaho).

Ishusho ya 9 igaragaza uburyo bune bushoboka ku byavuye mu irasantego. Ubwiza bw’irasantego buhinduka bitewe n’icyiciro cy’umurongo ngenderwaho; umurongo wo hejuru witabwaho cyane (ariko igerwaho ni rito) mu gihe umurongo wo hasi utitabwaho na buke (ariko ugerwaho nabi).

Gahunda zose zipima izi ngero zose igihe zishyizeho umurongo ngenderwaho. Uburyo bwiza kandi buboneye bwo gukora ibi ni ukugena inyungu ivanguye—hashingiwe ku ndangagaciro za gahunda n’intego—kuri buri buryo bune bushoboka ku byavuye mu irasantego kandi ugahitamo umurongo ngenderwaho uzatuma wongera inyungu itavanguye (Adams na Hand, 2000; Hoadley na Oliver, 1998).

Ishusho ya 10 irerekana uko ingo zisaranganyijwe hakurikijwe ibyavuye mu irasantego ku Rwanda. Dufashe nk’urugero rw’umurongo ngenderwaho wa 34 cyangwa muni, ibivuyemo ku ijanisha (100%) ry’umurongo w’igihugu mu kugena agaciro k’ibyifashishijwe ni:

- Kwitabwaho: 28.7% biri muni y’umurongo n’irasantego nyakuri
- Kutagerwaho: 11.5% biri muni y’umurongo kandi ku bw’ikosa nta rasantego
- Kugerwaho: 13.2% biri hejuru y’umurongo kandi ku bw’ikosa habaye irasantego
- Kutitabwaho: 46.6% biri hejuru y’umurongo kandi mu by’ukuri nta rasantego

Kongera umurongo ngenderwaho kuri 39 cyangwa muni byongera kwitabwaho

no kutagerwaho ariko ku makosa yo kugerwaho no kutitabwaho:

- Kwitabwaho: 33.4% biri muni y'umurongo n'irasantego nyakuri
- Kutagerwaho: 6.8% biri muni y'umurongo kandi ku bw'ikosa nta rasantego
- Kugerwaho: 20.7% biri hejuru y'umurongo kandi ku bw'ikosa habaye irasantego
- Kutitabwaho: 39.1% biri hejuru y'umurongo kandi mu by'ukuri nta rasantego

Ni uwuhe murongo ngenderwaho watoranywa bishingiye ku nyungu yose

ivanguye. Niba ibyavuye muri buri rasantego bifite inyungu kuri buri rugo cyangwa

icyo birusaba, icyo gihe inyungu ivanguye ku murongo ngenderwaho runaka ni:

| | |
|--|---|
| Inyungu ku rugo koko rwitaweho | x Ingo koko zitaweho – |
| Ibyakoreshejwe n'urugo ku bw'ikosa rutagezweho | x Ingo ku bw'ikosa zitigeze zigerwaho – |
| Ibyakoreshejwe n'urugo ku bw'ikosa rwitaweho | x Ingo zitaweho ku bw'ikosa + |
| Inyungu ku rugo rutitaweho by'ukuri | x Ingo zititaweho by'ukuri |

Mu gushyiraho umurongo ngenderwaho mu buryo bukwiye, gahunga igomba:

- Gushyiraho inyungu n'ibizakoreshwa ku musaruro ushoboka, hashingiwe ku ndangagaciro n'itego
- Guteranya buri nyungu ivanguye kuri buri murongo ngenderwaho hakoreshejwe ishusho ya 10 ku murongo w'ubukene runaka
- Guhitamo umurongo ngenderwaho hamwe n'inyungu yose ishoboka ivanguye

Intambwe ikomeye cyane ni ukugena inyungu n'ibizakoreshwa ku musaruro w'irasantego. Gahunda ikoresha irasantego—hamwe cyangwa se nta byiciro—igomba kwibanda cyane cyane ku buryo iha agaciro kwitabwaho no kutitabwaho ugereranije n'udukosa two kutagerwaho no kugerwaho. Ni iby'igiciro gukurikiza inzira yo gutekereza mu nzira zisobanutse kandi zigambiriwe ku buryo bw'igenagaciro k'umusaruro w'irasantego.

Guhitamo inyungu rusange n'ibikoreshwa ni "ijanisha rikubita", aho inyungu yose ivanguye ari umubare w'ingo zitaweho koko cyangwa izitaritaweho by'ukuri:

| | | | | |
|---------------------|---|---|--------------------------------------|---|
| Ijanisha rikubita = | 1 | x | Ingo koko rwitaweho | - |
| | 0 | x | Ingo kubw'amakosa zitigeze zigerwaho | - |
| | 0 | x | Ingo zagezweho kubw'amakosa | + |
| | 1 | x | Ingo koko zitataweho. | |

Ishusho rya 10 riragaragaza ijanisha rikubita ku mirongo ngenderwaho ku ikarita y'ibyiciro bishya 2010/11 ku Rwanda. Ku ijanisha ry'100% ry'umurongo w'igihugu mu igenagaciro ry'ifatizo, inyungu yose ivanguye ni agahebuzo (75.4) ku murongo ngenderwaho wa 34 cyangwa muni, hamwe na ugereraniye bitatu bya kane by'ingo mu Rwanda zatoranijwe by'ukuri.

Ijanisha rikubita ripima uburyo kwitabwaho kw'ingo muni y'umurongo ndetse n'uburyo bwo kutitabwaho kw'ingo hejuru y'umurongo. Niba gahunda igena agaciro k'ubwitabwaho bwo hejuru (twavuga, inshuro ebyiri hejuru) ugereraniye n'ukutitabwaho, icyo gihe ishobora kugaragaza ibi igena inyungu yo kwitabwaho kuri 2 n'inyungu yo kutitabwaho kuri 1. Na none umurongo ngenderwaho watoranijwe uziyongera (2 x ingo koko zitaweho) + (1 x ingo koko zitataweho).²⁷

Nk'ubundi buryo bwo kugena inyungu n'ibikoreshwa ku musaruro w'irasantego ndetse no guhitamo umurongo ngenderwaho wo kongera inyungu yose ivanguye, gahunda igomba gushyiraho umurongo ngenderwaho wo kugera ku ijanisha ry'ubukene ryifuzwa muri buri ngo zatoranijwe. Umurongo wa 3 w'ishusho rya 11 ("%" rirasa intego

²⁷ Ishusho ya 10 nayo itanga BPAC, ibishingirwaho mu miterere y'ubukene bugeranyije yakoreshejwe na USAID mu kwemeza ikarita y'icyiciro y'ubukene. BPAC yavuzweho birambuye mu gice cya 9.

ingo zikennye'') rirerekana, ku Rwanda ikarita y'ibyiciro yakoreshejwe ku igena gaciro ku byakoreweho ubushakashatsi, ijanisha ry'ubukene riteganijwe mu ngo ziri ku cyiciro cyangwa hasi y'umurongo ngenderwaho runaka. Nk'urugero rw'100% ku murongo w'igihugu, kwibanda ku ngo zakoreweho ubushakashatsi zifite icyiciro cya 34 cyangwa muni zishobora kugera kuri 41.9 ku ijana by'ingo zose (umurongo wa 2) kandi zikaba zishobora kujya hamwe n'ijanisha ry'ubukene mu ngo zagejeje kuri 68.5 ku ijana (umurongo wa 3).

Ishusho rya 11 kandi rigaragaza izindi ngero ebyiri z'irasantego riboneye. Urwa mbere ni ukugerwaho ("% ingo zikennye zagezweho"). Nk'urugero rw'100% ry'umurongo w'igihugu hamwe n'igenagaciro z'ibyakorewe ubushakashatsi n'umurongo ngenderwaho wa 34 cyangwa muni, 75.7 ku ijana by'ingo zikennye zagezweho.

Urugero rw'irasantego rya nyuma mu ishusho rya 11 ni umubare w'imigendekere myiza y'ingo zikennye kuri buri rugo rudakennye rwagezweho ku ikosa (umurongo w'ahagana iburyo). Ku ijanisha ry'100% ku murongo w'igihugu ku igenagaciro ry'ibyakoreshejwe mu bushakashatsi n'umurong ngenderwaho wa 34 cyangwa muni, ukagera kuri 2.0 by'ingo zikennye bisobanuye kugera ku rugo 1 rudakennye.

9. Ibigize ikarita y'icyiciro cy'ubukene mu Rwanda

Iki gice kiribanda ku bikoresho 2 by'ikarita y'icyiciro cy'ubukene mu Rwanda hashingiwe ku bitego, uburyo, icyo ubukene aricyo, amakuru, ibipimo, ukubogama, guhamya, n'ikiguzi. Muri rusange, akamaro k'ikarita y'icyiciro cy'ubukene ni aka:

- Gukoresha amakuru aturutse mu bushakashatsi ku rwego rw'igihugu kw'ikoreshwa ry'amafaranga
- Gukoresha igisobanuro cy'ubukene gishingiye ku ikoreshwa ry'amafaranga nibyo byumvwa neza kandi bikoreshwa na guverinoma y'u Rwanda
- Kugaragaza ibogama n'ubuhamya bw'ijanisha ry'ubukene ku rugero mu gihe ruva ku byakoreshejwe mu bushakashatsi, hakubiyemo n'amategeko y'amakosa akunze kugaragara
- Kwibanda ku buryo bukwiye kandi busa n'izindi nzira zishoboka
- Imishobokere ya gahunda zo mu cyaro ndetse n'izirebana n'ubukene, hashingiwe ku bworohere no gukorera mu mucyo

9.1 Gwatkin n'abo bafatanyije

Gwatkin n'abo bafatanyije (2007) bubatse ikarita y'ibyiciro mu Rwanda bakoresheje uburyo bukoreshwa mu bihugu 56 hakoreshejwe ubushakashatsi bw'imiturire n'ubuzima (Rutstein na Johnson, 2004). Bakoresha isesengura ry'ibintu by'ingenzi kugira ngo bakore ibyoroshye byagenderwaho, ibipimo bihendutse bibomeka mu ngo 9,696 mu Rwanda muri 2003 DHS.²⁸ Igipimo cy'isesengura ry'ibintu ni nk'ikarita y'icyiciro uretse kom bitewe DHS idashaka amakuru y'imikoreshereze y'amafaranga, igipimo gishingiye ku ndorerwamo ubukene bureberwamo, ukugaragara

²⁸ DHS z'amakuru yose ku Rwanda kuva mu w'2000 zifite buri cyiciro cy'ingo mu incamake y'ibikoresho. (dhsprogram.com/topics/wealth-index/, yasuwe kuwa 7 Nyakanga 2015).

kwabwo ugereraniye n’uko ubukene bushingiye ku ikoreshwa ry’amafaranga butazwi, kandi bikaba byafatwa nk’igitangaza ku miterere²⁹ y’ubukungu. Ingero zizwi cyane z’igipimo cy’isesengura ry’ibintu by’ingenzi uburyo zikoresha bugizwe na Stifel na Christiaensen (2007), Zeller n’abo bafatanyije (2006), Sahn na Stifel (2003 na 2000), Henry n’abo bafatanyije (2003), na Filmer na Pritchett (2001).

Ibipimo 12 muri Gwatkin n’abo bafatanyije ni kimwe n’ibyo mu ikarita y’icyiciro cy’ubukene cyoroheje hakurikijwe ubworohe, igiciro gito, n’uko kigenzurwa:

- Ibiranga icumbi:
 - Kuba hari amashanyarazi
 - Ubwoko bw’igorofa
 - Ubwoko bw’ibitekeshwa
 - Isoko y’amazi yo kunywa
 - Ubwoko bw’ubwiherero
- Nyir’ibintu bikoreshwa mu buzima bwa buri muni:
 - Radiyo
 - Televiziyo
 - Telefoni
 - Frigo
 - Amagare
 - Amapikipiki
 - Imodoka cyangwa amakamyoy

²⁹ Nyamara kandi, ibipimo bisa n’“Igipimo cyo hejuru (flat maximum)” ni ingenzi, bityo ibipimo bya PCA byubakanywe ubushishozi n’ikarita y’icyiciro cy’ubukene ishingiyeye ku mibereho bishobora gufata ishusho isa n’ibisanzwe (birashoboka “ibyinjira bihoraho”, reba Bollen, Glanville, na Stecklov, 2007), binashobora gushyira ku nzego ingo mu buryo bumwe. Amagereranya yo gushyira ku nzego bikorewe ku bipimo bya PCA n’amakarita y’icyiciro cy’ubukene yubakiye ku mibereho arimo Filmer and Scott (2012), Lindelow (2006), Wagstaff na Watanabe (2003), na Montgomery n’abo bafatanyije (2000).

Gwatkin n’abo bafatanyije atanga ubundi buryo 3 bukoreshwa ku bipimo:

- Kugabanya ingo hakurikijwe ibyiciro kugira ngo harebwe uko ubuzima buhinduka mu rwego rw’imibereho n’ubukungu
- Gukurikirana (binyuze mu bushakashatsi) uko serivisi z’ubuzima zigera ku bakene
- Gupima uko serivisi z’ubuzima zigera ku baturage biciye mu bushakashatsi buto buto

Igitego cya mbere nicyo gishingiye ku irasantego, naho ibya nyuma bibiri byibanda cyane ku migendekere myiza y’ikurikiranabikorwa, ku bw’ibyo igipimo gikwiye gukoreshwa cyane hano ku ikarita y’icyiciro cy’ubukene.

Ikindi kandi, igipimo cya Bwana Gwatkin n’abo bafatanyije kirahenze cyane kandi kiragoye gukoresha kurusha ikarita y’icyiciro cy’ubukene. Mu gihe ikarita y’icyiciro cy’ubukene ikenera kongerwaho imibare igera ku 10 (imwe muriyo ikaba ari amazeru), igipimo cya Bwana Gwatkin n’abo bafatanyije cyo gikenera gukoresha imibare igera kuri 82, buri wose ufite ibice bigera kuri bitanu inyuma y’akitso n’igice gifite ikimenyetso cyo gukuramo.

Bitandukanye n’igipimo gisanzwe, hano ikarita y’icyiciro cy’ubukene ihuzwa ako kanya n’umurongo w’ubukene ushingiyeye ku bikoreshwa. Ku bw’ibyo, ubu buryo bwombi bushobora gukoreshwa mu gushyira ingo mu byiciro, gusa ikarita y’icyiciro cy’ubukene niyo yonyine yerekana ibyakoreshejwe hashingiye ku miterere y’ubukene.

Mu by’ukuri, Bwana Gwatkin n’abo bafatanyije—akunda ibipimo byose—kandi agasobanura ubukene akoresheje ibirango n’ingingo muri buri gipimo ubwacyo. Hanyuma, igipimo ntabwo ari kamara ku guhagararira ikindi kintu (nk’imikoreshereze y’amafaranga); ahubwo, ni urugero rugaragara rw’igisobanuro cy’ubukene budashingiye

ku kutakoresha amafaranga. Ntabwo ari ukubeshya—kandi ni ukuri—dusobanuye ubukene muri ubu buryo, ariko ntabwo ar muri rusange igisobanuro gishingiye ku mikoreshereze y’amafaranga.

Uburyo bw’igipimo cy’igikoresho busobanura abantu nk’abakene iyo ibikoresho byabo (bifatika, abantu, imari, n’imibanire) bigwa muni y’igipimo. Ibisonuro ku bikoresho bishingiye ku buryo tubona amajyambere biri mu bitabo bya Bwana Carter na Barrett (2006), Schreiner na Sherraden (2006), Sahn na Stifel (2003), na Sherraden (1991).

Inyungu z’ingenzi z’ibipimo by’ibikoresho bishingiye kuko tubona ibintu ni:

- Nyir’igikoresho aba agaragara kandi birorohye gupima uko gokoreshwa
- Kugera ku mutungo mu gihe kirekire—kandi ubushobozi bwo kubyara inyungu no gukoreshwa—bushingira ku buryo gicungwa
- Ibikoresho bigera ku bushobozi ako kanya, ikinyuranyo kiri hagati, tuvuge, “Ese amafaranga yinjira atuma habaho ubuzima bwiza?” ugereranije “Ese ubwiherero bumena mu cyobo cyabugenewe?”

Mu gihe uko tubona igikoresho n’inyungu/imikoreshereze bihabanye, ariko usanga bifatanye. Nyuma y’ibyo byose rero, inyungu/imikoreshereze ni ibigaragaza uko umutungo zinjiye/wakoreshejwe mu ikoreshwa rw’ibikoresho bitunzwe. Iyi mibonere yombi ni inyoroshyo y’ibipimo byo hasi—bitewe n’aho imikorere igarukira ku bisobanuro n’ingero—y’ibipimo byo hejuru n’uko umusaruro uva mu mibereho myiza y’umuntu ufatwa ku buryo bwuzuye.

9.2 Ikigo IRIS

USAID yahaye inshingano Ikigo IRIS (2011) zo gukora ikarita y'icyiciro cy'ubukene (yitwa "Igikoresho cyo gupima ubukene" cyangwa PAT) kugira ngo Ibigo bito by'abafatanyabikorwa babo mu Rwanda bashobore gutanga raporo y'abo bita "abakene cyane" (muri 2005–2006, muni y'Idolari 1.25/ku muni 2005 PPP). Muri rusange, PAT ku Rwanda ni nk'ikarita y'icyiciro cy'ubukene yoroheje, uretse ko:

- Ikurikirana uburyo bw'ikoreshwa ry'ako kanya kandi igakoresha isano ry'ubukene rya 0 cyangwa 100 ku ijana (aho gukoresha hagati ya 0 n'100)
- Ikoresha ibyavuye mu bushakashatsi bushaje bwa EICV (2005–2006 aho gukoresha 2010–2011)
- Ifite ibirango byinshi (17 aho kuba 10)
- Ntigaragaza amakosa akunze kubaho

Igikoresho cyo gupima ubukene gishimangira imirongo itanu y'ubukene 2005 PPP:

- \$0.75/ku muni
- \$1.00/ku muni
- \$1.25/ku muni
- \$2.00/ku muni
- \$2.50/ku muni

IRIS ipima mu buryo bune bw'igabanuka mu nzego zombi rumwe cyangwa ebyiri (IRIS, 2005), ishingira ku buryo bumwe bw'igabanuka rigaragaza ijanisha rya 64 rya logaritime kuri buri mikoreshereze y'urugo. Ikoresha ibirango 17 (IRIS, 2011) byoroshye kandi bishobora gusuzumwa:

- Imiturire:
 - Ingano y'urugo (n'ubuso bwarwo)
 - Imyaka ya nyir'urugo (n'ibiro bye)
 - Uruhare rwa buri muntu ufite imyaka 5 cyangwa se ukiri muto
- Niba nyir'urugo yarize
- Niba nyir'urugo afite akazi
- Ibiranga urugo:
 - Ubwoko bw'igorofa
 - Ubwoko bw'igisenge
 - Ubwoko bw'ubwiherero
 - Ubwoko bw'ibitekeshwa
 - Inkomoko y'amashanyarazi
 - Umubare w'ibyumba
- Nyir'ibintu bikorehwa mu rugo :
 - Umubare wa radiyo cyangwa icyuma gikoreha kaseti
 - Umubare w'amagare
 - Umubare w'amasuka n'ibitiyo
 - Amatungo
- Aho biherereye :
 - Akarere
 - Umujyi/icyaro

Schreiner (2014) agaragaza amapome kuri pome muri raporo ya IRIS (2011)

ugereraniye na Schreiner (2010a).³⁰ Ibyavuye mu byakoreshejwe mu bushakashatsi, PAT ifite ukubogama guto (1.00 ku ijana ugereraniye 0.77 ku ijana amanota y'ikarita

³⁰ Schreiner (2010a) akosora uguta agaciro kutari ko kw'igikuba PPP 2005 kwa IRIS kandi agashyira ku murongo ibihuye n'ukuri kugira ngo ahuze ijanisha ry'ubukene ry'idolari 1.25 ku munsu byatangajwe na IRIS.

y'icyiciro).³¹ Ku irasantego, PAT igaragaza 0.2 ku bantu hejuru y'100 by'ukuri bakoresha ikarita y'icyiciro. Ku bw'ibyo rero, mu buryo bukwiye, PAT n'ikarita y'icyiciro nabyo biri kumwe.

IRIS kandi muri raporo ikwiye mu buryo bushingiye ku munzani w'ubukene ugaragara ku buryo bukwiye. Ikigo IRIS (2005) cyashyizeho BPAC, kandi USAID yarayemeje nk'igipimo cyo kwemeza ibikoresho byo gupima ubukene bikoreshwa mu bigo bito by'abafatanyabikorwa. BPAC ibona ku buryo bukwiye mu buryo bwo kwitaho ndetse no mu buryo bw'itandukaniro risesuye hagati yo kutagerwaho no kugerwaho (ibyoy, hashingiwe ku buryo bwa PAT, bungana n'agaciro gasesuye k'ububogame bw'ijanisha ry'ubukene bwemejwe).

Uko bibarwa ni:

$$BPAC = 100 \cdot \left(\frac{Ibirimo - | Ukudakwira - Icyayobi |}{Ibirimo + Ukudakwira} \right).$$

Bitewe n'ukubogama (mu buryo bwa PAT) ni ikinyuranyo hagati y'ukutagerwaho n'ukugerwaho, kandi bitewe no kwita ku buziranenge

$\frac{100}{Ibirimo + Ukudakwira}$ bizakenerwa gusa igihe hagereranywa ikarita z'ibyiciro

ugereranyije n'abaturage hamwe n'ijanisha ry'ubukene ritandukanye (ariko binyuranye no guhitamo mu makarita y'ibyiciro ku gihugu runaka mu mwaka runaka ku murongo w'ubukene runaka), Umubare woroshye ni $BPAC = Ibirimo - | Ikosa |$ ishyira amakarita y'ibyiciro nk'imibare ihambaye.

³¹ Mu gihe ikosa rizwi, rishobora gukurwaho, bityo PAT n'ikarita y'icyiciro byombi nta makosa bigira.

Mu gusobanura BPAC nka Ibirimo– | Ikosa | ifasha kugaragaza impamvu BPAC ntabwo ifasha mu kugereranya PAT n’ikarita y’icyiciro yoroheje (Schreiner, 2014). Hashingiwe ku byavuzwe hejuru muri iyi nyandiko³², ikarita y’icyiciro yoroheje ikora igereranya ritabogamye ry’iajanisha ry’ubukene, hatitawe ku kutagerwaho bitandukanye no kugerwaho. Mu gihe BPAC ishobora gukoreshwa mu kugereranya uburyo bwose bw’amakarita y’ibyiciro abantu bakoresha uburyo bw’igereranya ry’imikoreshereze y’amafaranga, ntabwo bisobanutse neza gukoresha BPAC ku igereranya ry’ingo rikoresha ikarita y’icyiciro cy’ubukene. Ni ukubera iyi mpamvu ikarita y’ubukene idakoresha umurongo ngenderwaho wo gushyira mu byiciro ingo nk’100% bakennye cyangwa 0% bakennye. Ariko, ingo zifite isano y’ubukene buri hagati ya 0 kugeza ku 100%. Niba ukoresha ikarita y’icyiciro cy’ubukene ashyizeho umurongo ngenderwaho, icyo gihe ibibazo bigendanye nabyo bireba gusa irasantego, kandi bikaba bidashobora guhungabanya amajanisha y’ubukene yagaragajwe na rimwe.

N’ubwo IRIS itanga raporo za PAT z’irasantego rikwiye kandi n’ubwo umubare wa BPAC ugaragaza irasantego rikwiye, IRIS ivuga ko PAT yakagombye kuba ikoresha ku irasantego.³³

IRIS kandi ishidikanya ko PAT yabashobora kugira umumaro mu kubara impinduka, yemeza ko “ntabwo bigaragara neza ko ibikoresho bizakoresha mu kugaragaza impinduka nyakuri mu bukene mu gihe runaka kubera amakosa

³² Ukutagira amakosa kwa PAT—cyangwa kw’indi karita y’icyiciro iyo ari yo yose—nako gusaba igenekereza.

³³ povertytools.org/faq/faq.html#11, byafashwe kuwa 19 Gashyantare 2009.

bigendanye. Uretse ko impinduka mu ijanisha ry'ubukene ziri ku rugero rudasanzwe kandi n'ibikoresho bikaba bidakwiye ubusanzwe, icyo gihe impinduka zagaragajwe ziba ziri mu murongo w'ikosa.’³⁴

Bihabanye, irasantego n'igereranya ry'impinduka mu gihe runaka bishoboka gukoreshwa igihe bishyigikiwe n'ikarita y'icyiciro cy'ubukene yoroheje. By'umwihariko, iyi nyandiko igaragaza irasantego rikwiye ku barikoresha bashaka gufata ibyemezo ubwabo igihe bashyira mu byiciro barasa ku ntego ku buryo bunoze ku mpamvu zabo.

³⁴ povertytools.org/faq/faq2.html, byafashwe kuwa 7 Ukuboza 2012.

10. Umwanzuro

Gahunda zishingiye ku bukene mu Rwanda zishobora gukoresha ikarita y'icyiciro cy'ubukene yoroheje mu gushyira abakiliya mu byiciro hagamijwe serivisi zirashe ku ntego kandi hakagereranywa:

- Isano iri hagati y'ibikoreshwa n'urugo muni y'umurongo w'ubukene runaka
- Ijanisha ry'ubukene ku itsinda ry'ingo ku kintu no mu gihe runaka
- Impinduka mu ijanisha ry'ubukene ku itsinda ry'ingo mu gihe kirekire³⁵

Ikarita y'icyiciro nshya hano—ishingiye ku byavuye mu bushakashatsi 2010–2011 EICV—isimbuye ikarita y'icyiciro ishaje—hashingiwe ku byavuye mu bushakashatsi 2005–2006—muri Shreiner (2010a). Ikarita nshya rero igomba gukoreshwa kuva ubu. Ikarita nshya n'ishaje zizashingira ku gisobanuro kimwe cy'ubukene, ariko abazikoresha boshobora gupima impinduka igihe cyose bifashishije umurongo kuva ku ikarita ishaje no gukurikirana ku ikarita nshya.

Ikarita y'icyiciro ntabwo igoye gukoreshwa kandi ishobora kumvikana no kubatari inzobere. Yakozwe ku buryo bworoheye umuntu wo mu cyaro, imiryango yita ku bukene mu Rwanda ishaka kuvugurura uburyo bakurikirana kandi bacunga imigendekere myiza y'imibereho.

Ikarita y'icyiciro yubatswe hakurikijwe ibyavuye mu bushakashatsi 2010–2011 EICV, igaragaza imirongo 10 y'ubukene, kandi yapimwe hakoreshejwe igice cy'ibyavuye mu bushakashatsi 2010–2011 EICV. Kubogama no guhamya neza bigaragazwa ku igereranya ry'isano y'ubukene bw'ingo n'igereranya ry'amajanja y'ubukene

³⁵ Ibyemejwe ku ikarita y'icyiciro ku mpinduka si ngombwa ko biba ibyemejwe ku ngaruka za gahunda.

bw'amatsinda ku kintu runaka mu gihe runaka. Hagaragazwa kandi niba irasantego rikwiye.

Igihe ikarita y'icyiciro ikoreshwa mu guha agaciro ibyakoreshejwe mu bushakashatsi, ikinyuranyo cyo hejuru hagati y'igereranya n'amajanisha nyakuri y'ubukene ku matsinda y'ingo ku kintu runaka mu gihe runaka ni 2.2 ku ijana. Impuzandengo yo hejuru y'ukubogama ku mirongo 10 y'ubukene iri hafi ya 1.1 ku ijana. Ukutabogama kugereranyije gushobora kuba ukuyemo ukubogama kuzwi ku murongo w'ubukene runaka mu byagereranyijwe by'umwimerere.

Nka $n = 16,384$ na 90 ku ijana yizewe, gihamya y'ikinyuranyo ni ± 0.8 ku ijana cyangwa birenze.

Niba ikigo gishaka gukoresha ikarita y'icyiciro ku irasantego, icyo gihe ibizavamo bitanga amakuru yo guhitamo umurongo ngenderwaho ubereye indangagaciro zawo n'intego.

N'ubwo tekini z'ibarurishamibare ari nshya, kandi ububonere bwazo akaba ari ingenzi cyane, gukora ikarita y'icyiciro bishingira ku gukorera mu mucyo no kuba yoroshye gukoreshwa. Nyuma y'ibyo byose, ububonere buba bubu iyo ikigo cyumva kandi cyibona ko gukoresha ikarita y'icyiciro bivunanye cyangwa iyo kuyikoresha kidashatse kuyikoresha gusa.

Kubera iyi mpamvu, ikarita y'icyiciro cy'ubukene iroroshye gukoreshwa, ikoresha ibirango icumi bidaca ku runde, bihendutse, kandi byoroshye kugenzurwa. Amanota ni amazeru cyangwa imibare nyayo, k'ibyiciro kuva kuri 0 (cyane muni y'umurongo

w'ubukene) kugera ku 100 (gake muni y'umurongo w'ubukene). Ibyiciro bihindurwa mu isano hakoreshejwe imbonerahamwe ntangarugero, umurongo ngenderwaho mu irasantego nawo uroroshye gukurikizwa. Uko ikozwe hageragejwe korohereza ikoreshwa ryayo ku bushake bw'abayobozi b'ibigo ku kumva no kwizera ibyiciro no kwemerera abatabizobereyemo kongeraho ibindi byiciro ku buryo bwihuse bageze aho bakorera.

Mu ncamake, ikarita y'icyiciro cy'ubukene yoroheje ikorera mu mucyo, ni uburyo buhendutse kuri gahunda zita ku bukene mu Rwanda mu kugereranya amajanja y'ubukene bushingiye ku ikoreshwa ry'amafaranga, gushaka impinduka mu majanja y'ubukene mu gihe runaka, na serivise z'irasantego. Ubu buryo kandi ku gihugu icyo aricyo cyose gifite imibare imeze kimwe.

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Amabwiriza yo gukoresha ibirango byo mu mbonerahamwe

Ibikurikira byavuye mu:

Mu kigo cy'igihugu cy'ibarurishamibare mu Rwanda. (2010) *Enumerator Manual for the 2010/11 EICV*, Kigala, [Gitabo]

and

Mu kigo cy'igihugu cy'ibarurishamibare mu Rwanda. (2010) *Enquête Intégrale sur les Conditions de Vie des Ménages: 2010/11*, Kigala, [rw'urutonde rw'ibibaz].

Mu gihe haba hari ikintu kitabonetse ahangaha, byaba ari ubufasha bukeya twabonye bw'umukarani, nkuko byagaragaye mu gikorwa cya “2010/11 EICV”. Ubwo ni uburyo bwakoreshejwe muri *Simple Poverty Scorecard*[®] bushobora kuba butarashyizeho amabwiriza (andi Atari aya mabwiriza) yo gukoreshwa n'abakarani bose b'ibarura. icyaba kitarasobanuwe neza kiri muri aya mabwiriza, twabyita ubufasha buke bw'umukarani w'ibarura.

Amabwiriza rusange

Uzuza imborerahamwe iri hejuru n'inyuma y'urupapuro rwo gukoreraho mbere na mbere, ukurikije amabwiriza ari ku rupapuro inyuma. By'umwihariko, ntubaze ibiri mu birango bya mbere, kabiri na gatatu mu mbonerahamwe ako kanya. Ahubwo koresha amakuru wahanditse ku rupapuro inyuma atuma wandika ibisubizo nyabyo ku kirango cya mbere, kabiri na gatatu.

Ntusomere ibisubizo ubazwa. Ku bindi bitari muri aya mabwiriza soma ikibazo, uhagarare, ubundi utegereze igisubizo. Niba ubazwa ashaka ku umusobanurira birushijesho cyangwa hari aho ashidikanya, musomere ikibazo na none ugerageze kumufasha ugendeye kuri aya mabwiriza, cyangwa wowe, nk'umukarani, ubikore uko bikwiye.

Muri rusange, ushobora kwemera ibisubizo wahawe n'ubazwa. Ariko mu gihe usubiza avuze ibintu bidahura n'ibyo umubajije, usubiza yaba adasanzwe cyangwa usubiza yaba akeneye ubufasha bumwereka ubuntu agomba gusubiza, ubundi ugasubiramo ikibazo ukamuha ubufasha ako ubona bikwiye ugendeye kuri aya mabwiriza.

Mu gihe ibirango hafi ya byose muri (*Simple Poverty Scorecard*[®]) byasuzumwe, ntukeneye gusuzuma ibisubizo kereka mu gihe hari ibyo ubona ko igisubizo gishobora kidahuye, kandi iryo suzuma ryafasha mu ireme ry'ibisubizo. Urugero, ushobora guhitamo gusuzuma niba usubiza ashidikanya, atabishaka cyangwa kurundi ruhande aguha ibimenyetso by'uko akubeshya cyangwa ari kwitiranya ibintu. icyo gihe isuzuma ni ngombwa niba umwana ari umunyamuryango cyangwa umuturanyi akavuga ibintu bitandukanye nibyo usubiza yasubije. Isuzuma ni igitekerezo cyiza na none niba ubonye ikintu wowe ku giti cyawe, nk'ikintu kiramba usubiza ashobora kuba adafite, hari nkumwana uri kurira mu ruriro kandi atabazwe nk'umunyamuryango wo muri urwo rugo, bishobora kugaragara ko usubiza atavugishije ukuri.

Muri rusange, ikoreshwa rya (*Simple Poverty Scorecard*[®]) rizamera neza bishoboka nk'ikoreshwa rya (2010/11 EICV). Urugero, ikaganiro cyo gushyira mu cyiciro cy'ubukene kizabera mu rugo rw'usubiza kubera ko n'ikiganiro cya (2010/11 EICV) nacyo cyaberaga mu rugo.

Tugendeye ku biri mu *Gitabo*, "Umukarani w'ibarura afite umurimo w'ingenzi cyane mu ibarura kuko ariwe ugirana ibiganiro n'abatanga amakuru akenewe. Ibi bisaba ko agira imyifatire myiza kugira ngo abo baganira bamusubize batishisha. Mugomba rero kwitwararika amabwiriza ari muri iki *Gitabo* mukayifashisha buri gihe bibaye ngombwa. . . . Ntimugomba na rimwe guhindura amabwiriza muhawe.

“Ni ngombwa buri gihe gusoma ibibazo nk’uko byanditswe ku ntonde z’ibibazwa. Nyuma yo gusoma ikibazo ku buryo bwumvikana, umukarani w’ibarura ategereza ko ahabwa igisubizo. Iyo ubazwa akabije gutinda gusubiza, biba bitewe n’imwe muri izi mpamvu:

- Nntiyumvise ikibazo
- Ntiasobanukiwe ikibazo
- Nta gisubizo agifitiye”

Ibanga ry’ibikubiye mu biganiro mu ngo:

Tugendeye ku biri mu *Gitabo*, “Ni ngombwa kubibutsa ko ibisubizo muhabwa mu ibarura byose ari ibanga.

“Ikindi, ibibazo byose bigomba kubazwa uwo muganira mwiherereye kugira ngo byumvikane ko ibisubizo bizagirwa ibanga. Haramutse hari abandi bantu igihe muganira, bishobora gutuma ubazwa atanga ibisubizo binyuranyije n’ukuri. Ni byiza rero ko hakorwa ibishoboka kugira ngo ikiganiro gikorwe mu muhezo usesuye.”

Tugendeye ku biri mu *Gitabo*, “Umukarani w’ibarura agomba kwitwararika ibi bikurikira:

- Kugira ikinyabupfura imbere ya buri wese (abayobozi, ababazwa, abo babana, umugenzuzi, abo bahuriye mu kipe, n’abandi). Imyitwarire myiza ituma uwo ari we wese aha agaciro ibyo mukora; kutiyandarika (ubusinzi n’izindi ngeso z’urukozasoni)
- Kwirinda kubangamira abandi mu buryo ubwo ari bwo bwose
- Kwambara mu buryo butarangaza abandi, kugira ngo ubazwa abagirire icyizere, abone ko muri inyangamugayo
- Kubahiriza gahunda kuko mutagomba gutuma ubazwa abategereza kandi yigomwe umwanya we wo kwikorera imirimo. Bibaye ngombwa ko mukererwa bitewe n’impamvu yumvikana, mugomba kumenyesha urugo rubategereje ko muza gukererwa, ndetse mukabaha indi saha yo kubonana
- Kwihangana no gushishoza mu gihe muganira mwirinda kubangamira ubazwa ngo mube mwatuma atanga ibisubizo bidahuye n’ukuri kuriho”

Tugendeye ku biri mu *Gitabo*, “Hari ibice byinshi by’ibibazo ingo nyinshi zishobora gusubiza zitishisha. . . . Ariko, hari ibice by’ibibazo bishobora kubatera kwishisha. . . . Ni ngombwa rero gukora uko bishoboka kugira ngo ibiganiro bikorwe muri mu muhezo. Wasobanurira mu kinyabupfura gishoboka cyose uwo ariwe wese ikiganiro kitareba ko ari ngombwa ko icyo kiganiro kiba mu ibanga.”

Ubazwa ninde:

Dushingiye ku byanditse ku rupapuro rwa mbere rw'urutonde rw'ibibazo, umuntu ubarurwa ni “byaba byiza ko yaba ari umutware w’urugo. Ariko iyo atabonetse, undi muntu mukuru uba mu rugo ashobora gutanga ibisubizo ku bibazo bireba ababa muri urwo rugo.”

Usubiza ntagomba kuba ari ukora mu kigo cyanyu.

Tugendeye ku biri mu *Gitabo*, “Ubazwa ku byerekeye igika cya I yagombye kuba ari umutware w’urugo. Iyo adahari cyangwa bibaye ngombwa ko agenda, mugomba gushaka undi muntu mwahitamo akamusimbura. Ni ngombwa ko umusimbura aba ashobora gutanga amakuru yose akenewe ku bagize urugo bose. Abandi bantu bagize urugo nabo bashobora kwinjira mu kiganiro bakagenda buzuzanya mu gusubiza, cyane cyane iyo ibisubizo birebana n’ibyo bazi.”

Tugendeye ku biri mu *Gitabo*, “Umutware w’urugo yerekanwa n’abagize urugo ubwabo. Niwe werekanwa iyo umukarani w’ibarura abajije iki kibazo ngo: ‘Umutware w’urugo ni nde?’ Akenshi ariko si buri gihe, uwo muntu aba ari ufite uruhare runini mu gutunga urugo, kandi azi neza ibyo abagize urugo bakora. Ashobora kuba umugore cyangwa umugabo.”

Kubaza:

Tugendeye ku biri mu *Gitabo*, “Mu gukora ibiganiro, mugomba kubaza ibibazo byose neza nk’uko byanditse ku rutonde rw’ibibazwa, mukurikiza amabwiriza akubiye muri iki *Gitabo* cyangwa mu rutonde rw’ibibazwa. Urutonde rw’ibibazwa rwuzuzwa mu gihe cy’ikiganiro. Ntimugomba kwandika ibisubizo ku kandi gapapuro ngo muze kubyandukura nyuma. Ntimugomba no kwizera ko mushobora gufata mu mutwe ibyo bababwiye ngo muze kwuzuzwa urupapuro mumaze kuva muri urwo rugo. Mugomba kwitwararika ibi bikurikira :

- Kwirinda amarangamutima. Akenshi, abantu baba bitonze cyane iyo bari kumwe n’abo batamenyeranye, bigatuma bashaka gutanga ibisubizo bitaribyo cyangwa kwifata ukuntu byashimisha umushyitsi
- Kwirinda kwerekana ko mutangaye, mugaye cyangwa mushimye iki n’iki mu byo ubazwa avuze, kandi ntimukamubwire uko mwe mubyumva. Naramuka ababajije uko mubibona, mutegereze ikiganiro kirangire mubone kubivuganaho
- Kwirinda kujya impaka ku bibazo n’ubazwa. Ubazwa natanga ibisubizo bitagira aho bihuriye n’ibibazo cyangwa bikomeye, ntimugahite mumuhagarika ahubwo muzumve ibyo avuga, maze mugende mumugarura ku kibazo nyacyo. Mwibuke ko ari mwe muyobora ikiganiro”

Gusuzuma intonde z'ibibazwa zujijwe:

Tugendeye ku biri mu *Gitabo*, “Nyuma y’ikiganiro, mugomba kureba niba ibice byose byujijwe neza kandi ku buryo busomeka. Mugomba kwemeza ko mwabajije ibibazo byose bya ngombwa ku bagize urugo bose, nk’uko bisabwa muri buri gika. Ibyo bigomba kuba ikiganiro kikirangira.

“N’ubwo haba udukosa tumwe na tumwe twaterwa no kwandika nabi mushobora gukosora, ntimugomba na rimwe kugira icyo muhindura mutabanje kwongera kubaza ibibazo ubazwa.”

Amabwiriza ku birango by'imbonerahamwe zihariye

1. Ni abanyamuryango bangahe b'uru rugo bafite imyaka 17 kumanura?
 - A. Batanu cyangwa hejuru
 - B. Bane
 - C. Batatu
 - D. Babiri
 - E. Umwe
 - F. Nta numwe

Tugendeye ku biri mu *Gitabo*, “*Urugo*: ni abantu baba hamwe, basangira bakaba bamaranye nibura amezi atandatu abanziriza ibarura. Hari uburyo bugomba kwitabwaho by'umwihariko:

- Abacumbitse cyangwa abashyitsi babanye n'abo mu rugo bakanasangira ntibabarirwa mu barugize
- Abantu bapfuye mu mezi 12 ashize ntibabarirwamo, n'ubwo baba barabanye n'abo bari mu rugo igihe kirenze amezi 6
- Impinja ziri muni y'amezi 6 zibarwa nk'abagize urugo
- Abageni bamaze iminsi bashyingiwe (n'iyi baba bataramara amezi 6) bakaba barasubiye iwabo babarwa nk'ababa mu rugo
- Umuntu ufatwa ko ari umutware w'urugo buri gihe abarwa nk'uba mu rugo n'ubwo yaba yamaranye n'ababa muri urwo rugo amezi ari muni y'atandatu mbere y'ibarura
- Abantu bamaze igihe hanze bakaba bamaze kugaruka nabo babarwa nk'abagize urugo
- Umuntu wese waba amaze kwakirwa mu rugo akaba ateganya kuhamara igihe kirenze amezi 6 nawe abarwa nk'uwo mu rugo
- Umuntu wese wamaze amezi 6 atari mu rugo kandi ataba mu rundi rugo, urugero: abanyeshuli bacumbikiwe n'ikigo

“Amoko y'ingo ni aya:

- Urugo rugizwe n'umutware warwo, abo bashakanye n'abana babo, se, mwishywa we n'abandi bantu (abo bafitanye isano cyangwa batayifitanye), baraye mu nzu imwe bakanasangira mu mezi 6, mu gihe cy'amezi 12 yabanjirije ikiganiro cy'ibarura
- Urugo rw'umuntu mukuru umwe
- Urugo rugizwe n'umugabo n'umugore, cyangwa abagabo benshi n'abagore babo, bafite cyangwa badafite abana

“Kuzuzwa urutonde rw’abagize urugo bigomba gukoranwa ubushishozi. Kwandika abagize urugo bikurikirana bitya:

- Umutware w’urugo (niwe ubanza imbere n’iyo yaba adahari)
- Abana b’umutware w’urugo badafite ba nyina muri urwo rugo
- Uwashakanye cyangwa abashakanye n’umutware w’urugo
- Iyo hari abagore benshi bashakanye n’umutware w’urugo, ubandika ukurikije uko bahashyingingiwe, kandi buri wese akurikirwe n’abana be mbere yo kwandika umugore ukurikiyeho
- Ababyeyi b’umutware w’urugo (se na nyina)
- Abandi bene wabo b’umutware w’urugo n’ab’uwo bashakanye (barumuna, bashiki, baramukazi, sebukwe, n’abandi)
- Abo batagira icyo bapfana (abakozi bo mu rugo, abahacumbitse)

“Ni ngombwa rero kugaragaza neza igihe yamaze atarubamo. Ashobora kuba yaragiye ahaba ubundi ntahabe. Icyo ngombwa ni ukumenya igihe yamaze adahari ugiteranyije mu mezi 12 abanziriza umunsi w’ibarura. Mukurikizeho kumubaza niba yarabaga cyangwa atarabaga mu rundi rugo, uretse umutware w’urugo.

“Ibi bibazo bizatuma mumenya niba umuntu abarirwa cyangwa atabarirwa mu bagize urugo.

“Niba igihe yamaze adahari kiri munsi cyangwa kingana n’amezi 6, uwo muntu abarirwa mu bagize urugo.

“Umuntu utarahabaye mu gihe kirenze amezi 6, akaba ataranabarirwaga mu rundi rugo, abarwa nk’uri mu bagize urwo rugo. Abo ni nk’abari barwariye mu bitaro, abanyeshuri biga baba ku ishuri, abari mu kazi ka gisirikari, abashoferi n’abandi. Icyakora, umunyeshuri uba mu cyumba yigengaho, n’iyo yaba ari umwe, cyangwa akaba acumbikiwe akanagaburirwa n’abantu batari abo muri urwo rugo, azabarirwa mu rundi rugo.

“Umutware w’urugo ahora abarirwa mu bagize urugo, uko igihe yaba atarahabaye kingana kose, kandi agumya kubarurirwa mu bagize urugo n’ubwo yaba afite abagore benshi. Uruhinja rutagejeje ku mezi 6 kimwe n’umugenzi ushyingirwe aho vuba nabo birumvikana ko babarirwa mu bagize urugo.”

Ntusomere iki kibazo usubiza ako kanya. Ahubwo andika igisubizo gikwiye ugendeye ku byo wanditse ku rupapuro rw’inyuma.

Dushingiye ku byanditse ku rupapuro rwa mbere rw'urutonde rw'ibibazo, abantu basangiye bakanaba mu rugo mu gihe kiri muni y'amezi atandatu mubabare nk'abagize urugo mu gihe cyonyine ari:

- Umutware w'urugo ari mu rugo cyangwa atarimo
- Abana batarageza ku mezi 6
- Abageni (abagore bashyingiwe vuba)
- Abandi bazakomeza kuba muri urwo rugo
- Abantu badahari bataba no mu rundi rugo

2. Mu mezi 12 ashize, haba hari abantu hano mu rugo bakoze imirimo y’ubuhinzi-bworozi bakorera amafaranga cyangwa ikindi gihembo? (ukuyemo imirimo ya VUP)
- A. Babiri cyangwa hejuru
 - B. Umwe
 - C. Nta mumwe

Ntusomere iki kibazo usubiza ako kanya. Ahubwo andika igisubizo gikwiye ugendeye ku byo wanditse ku rupapuro rw’inyuma.

Reba “amabwiriza” ku birango byahise ku busobanuro bw’urugo n’umunyamuryango w’urugo.

Tugendeye ku biri mu *Gitabo*, “Bireba abagize urugo bose bafite imyaka 6 kujyana hejuru. *Icyitonderwa*: Imirimo ikorwa n’abanyeshuli igihe bari mu biruhuko ntabwo izabarurwa.”

Tugendeye ku biri mu *Gitabo*, “Imirimo y’ubukungu ivugwa ni imirimo ababa mu rugo bakora ikabahesha amafaranga ku buryo butaziguye. Mbere yo gutangira ikiganiro, byaba byiza kuganira n’ababa mu rugo ku buryo bwose bakoresha kugirango babone ifaranga. Ubwo buryo bugusha ku mirimo y’ubukungu inyuranye.”

Tugendeye ku biri mu *Gitabo*, *amezi 12 ashize* bivuze “mu gihe muri mu kiganiro, mugomba gusobanura neza uko icyo gihe kireshya. Urugero: niba ibarura ribaye tariki ya 6 ugushyirye 2010, ni ukuvuga ko ayo mezi abarwa guhera tariki ya 6 ugushyirye 2009 [and ended on 5 November 2010].”

Tugendeye ku biri mu *Gitabo*, “Iki gika kiri mu bikomeye kuko ibihe bijyana n’ibikorwa by’ubuhinzi ari ibihe by’ihinga, bikaba bidahura n’amezi 12 ashize akoreshwa nk’igihe cy’ifatizo muri iri barura. Hatoranyijwe igihe cy’amezi 12 kirangira igihe ibarura rikorwa, aho kuba ibihe by’ihinga.”

3. Mu mezi 12 ashize, haba hari abantu muri uru rugo bakoze ibikorwa by'ubucuruzi bitari iby'ubuhinzi bahembwa cyangwa bikorera ku giti cyabo waba warakoze uhembwa cyangwa wikorera ku giti cyawe, nk'iduka rito cyangwa ikindi cyose cyakuzanira amafaranga?
- A. Nta numwe
 - B. Umwe
 - C. Babiri cyangwa hejuru

Ntusomere iki kibazo usubiza ako kanya. Ahubwo andika igisubizo gikwiye ugendeye ku byo wanditse ku rupapuro rw'inyuma.

Reba “amabwiriza” ku birango byahise ku busobanuro bw'urugo n'umunyamuryango w'urugo.

Tugendeye ku biri mu *Gitabo*, “Bireba abagize urugo bose bafite imyaka 6 kujiyana hejuru. *Icyitonderwa*: Imirimo ikorwa n'abanyeshuli igihe bari mu biruhuko ntabwo izabarurwa.”

Tugendeye ku biri mu *Gitabo*, “Imirimo y'ubukungu ivugwa ni imirimo ababa mu rugo bakora ikabahesha amafaranga ku buryo butaziguye. Mbere yo gutangira ikiganiro, byaba byiza kuganira n'ababa mu rugo ku buryo bwose bakoresha kugirango babone ifaranga. Ubwo buryo bugusha ku mirimo y'ubukungu inyuranye.”

Tugendeye ku biri mu *Gitabo*, *amezi 12 ashize* bivuze “mu gihe muri mu kiganiro, mugomba gusobanura neza uko icyo gihe kireshya. Urugero: niba ibarura ribaye tariki ya 6 ugushyiraho 2010, ni ukuvugaga ko ayo mezi abarwa guhera tariki ya 6 ugushyiraho 2009 [and ended on 5 November 2010].”

4. Umuntu mukuru (mu myaka) uyobora urugo/umufasha w'igitsina gore ashobora gusoma ibarwa cyangwa akandiko gato (birebana n'ururimi) cyangwa yarangije nibura umwaka wa 1 w'amashuri abanza?
- A. Oya
 - B. Yego
 - C. Nta mugore uyobora urugo/umufasha

According to the *Manual*, “Mubaze ubazwa niba ashobora gusoma inyandiko ngufi (urugero: ibarwa cyangwa ubutumwa bugufi) cyangwa niba yaba yararangije nibura umwaka wa mbere w'amashuri abanza.”

Mu gihe uri kubaza iki kibazo, koresha izina risanzwe y'umugore mukuru (mu myaka) uyobora urugo/umufasha, wavuzwe niba ahari wavuzwe igihe wuzuzaha urupapuro rw'inyuma. Niyo mpamvu udasomera iki kibazo usubiza nka “Umuntu mukuru (mu myaka) uyobora urugo/umufasha w'igitsina gore ashobora gusoma ibarwa cyangwa akandiko gato (birebana n'ururimi) cyangwa yarangije nibura umwaka wa 1 w'amashuri abanza?” Ahubwo wagisoma nka “Umuntu mukuru <amazina> w'igitsina gore ashobora gusoma ibarwa cyangwa akandiko gato (birebana n'ururimi) cyangwa yarangije nibura umwaka wa 1 w'amashuri abanza?”

Ururimi urwo arirwo rwose bivuga ururimi urwo arirwo rwose, harimo atari gusa (icyongereza n'igifarana) ahubwo n'urundi rurimi urwo arirwo rwose. Nk'urugero, niba umugore uyobora urugo/umufasha adashobora gusoma no kwandika mu cyongereza cyangwa igifaransa, ariko ashobora kwandika no gusoma mu Kinyarwanda, ubwo ikimenyetso cy'igisubizo cyaba “B. Yego”.

Niba nta mugore uyobora urugo/umufasha muri urwo rugo (bigaragara nyuma yo kuzuzaha urupapuro rw'inyuma), ntiwiriwe umusomera na gato iki kibazo, shyiraho akamenyetso “C. Nta mugore uyobora urugo/umufasha”, hanyuma ujye ku kibazo gikurikiyeho.

Ku ntego za *Simple Poverty Scorecard*[®], umugore mukuru (mu myaka) uyobora urugo/umufasha ni:

- Umukuru w'urugo, niba ari igitsina gore
- Umufasha mukuru (mu myaka)/umwunganizi w'umukuru (umuyobozi) w'urugo, niba umukuru (umuyobozi) w'urugo ari igitsina gabo
- Nta wuhari, igihe umukuru w'urugo ari umugabo kandi adafite umufasha/umwunganizi nawe w'umunyamuryango w'urugo

Mu gihe hari abagore barenze umwe bakuriye urugo, baza iki kibazo umukuru (mu myaka) muri bo.

Tugendeye ku biri mu *Gitabo*, “Umutware w’urugo yerekanwa n’abagize urugo ubwabo. Niwe werekanwa iyo umukarani w’ibarura abajije iki kibazo ngo: ‘Umutware w’urugo ni nde?’ Akenshi ariko si buri gihe, uwo muntu aba ari ufite uruhare runini mu gutunga urugo, kandi azi neza ibyo abagize urugo bakora. Ashobora kuba umugore cyangwa umugabo.”

Dushingiye ku byanditse ku rupapuro rwa mbere rw’*urtonde rw’ibibazo*, *umuntu ubarurwa* ni “byaba byiza ko yaba ari umutware w’urugo. Ariko iyo atabonetse, undi muntu mukuru uba mu rugo ashobora gutanga ibisubizo ku bibazo bireba ababa muri urwo rugo.”

5. Ni ibihe bikoresho by'ingenzi byubatse inkuta?
- A. Rukarakara idateye isima, ibiti n'ibyondo bidateye isima, shitingi, cyangwa ibindi
 - B. Rukarakara iteye isima, amatafari ahiye, ibiti n'ibyondo biteye isima, amabuye, bolokosima, cyangwa imbaho

Tugendeye ku biri mu *Gitabo*, “*inzu ituwemo* igizwe n'inyubako zose zifatanye cyangwa zitandukanye (ariko mu gipangu kimwe), zituwemo n'urugo rumwe.”

Tugendeye ku biri mu *Gitabo*, “Niba ubazwa atanze igisubizo kitari mu bisubizo bisobanutse byateganijwe, mugomba gukoresha uburyo bwo gusubiza bwa 'Ikindi'.”

6. Ni ibihe bikoresho by'ingenzi bisakaye inzu yanyu?
- A. Ibyatsi, amategura, imigano (bamboo), shitingi, cyangwa ibindi
 - B. Amabati, cyangwa beton

Tugendeye ku biri mu *Gitabo*, “*inzu ituwemo* igizwe n'inyubako zose zifatanye cyangwa zitandukanye (ariko mu gipangu kimwe), zituwemo n'urugo rumwe.”

Tugendeye ku biri mu *Gitabo*, “Niba ubazwa atanze igisubizo kitari mu bisubizo bisobanutse byateganijwe, mugomba gukoresha uburyo bwo gusubiza bwa 'Ikindi'.”

7. Iyo bwije mucana iki cy'ingenzi kugira ngo mu nzu habone?
- A. Umuriro w'inkwi
 - B. Amabuye ikindi (kuyivuga), biogaz, cyangwa ibindi
 - C. Agatadowa
 - D. Buji, cyangwa Itara rya peteroli
 - E. Amashanyarazi, imoteri, cyangwa icyuma gikoresha imirasire y'izuba

Tugendeye ku biri mu *Gitabo*, “Ikibazo gifasha kumenya uburyo bw'ingenzi urugo rukoresha kubonesha mu nzu iyo bwije.”

Tugendeye ku biri mu *Gitabo*, “*inzu ituwemo* igizwe n'inyubako zose zifatanye cyangwa zitandukanye (ariko mu gipangu kimwe), zituwemo n'urugo rumwe.”

Tugendeye ku biri mu *Gitabo*, “Niba ubazwa atanze igisubizo kitari mu bisubizo bisobanutse byateganijwe, mugomba gukoresha uburyo bwo gusubiza bwa 'Ikindi'.”

8. Urugo rwanyu rufite uburiri bungahe?

A. Ntabwo

B. Bunwe

C. Bubiri

D. Butatu cyangwa hejuru

Iki gitabo nta makuru y'inyongera gifite arebana n'iki gipimo.

9. Urugo rwanyu rufite telephone igendanwa bingaha?

A. Nta nimwe

B. Imwe

C. Ebyiri cyangwa hejuru

Iki gitabo nta makuru y'inyongera gifite arebana n'iki gipimo.

10. Mu mezi 12 ashize, hari umuntu wo muri uru rugo wahinze imyaka cyangwa ibindi bihingwa bigenewe kuribwa cyangwa gucuruzwa, woroye amatungo cyangwa ibinyamababa? Niba ari yego, bafite amatungo angahe?

- A. Ntibahinga
- B. Barahinze ariko nta matungo bafite
- C. Barahinze, n'itungo rimwe
- D. Barahinze, n'amatungo abiri cyangwa hejuru

Iki kibazo gishobora kubazwa mu byiciro bibiri. icya mbere, baza: “Mu mezi 12 ashize, hari umuntu wo muri uru rugo wahinze imyaka cyangwa ibindi bihingwa bigenewe kuribwa cyangwa gucuruzwa, woroye amatungo cyangwa ibinyamababa?” Niba igisubizo ari “Oya”, shyira akamenyetso kuri “A. Ntibahinga”, hanyuma ntumubaze icyiciro cya kabiri cy'ikibazo.

Niba igisubizo ku cyiciro cya mbere cy'ikibazo ari “Yego”, nyuma baza icyiciro cya kabiri cy'ikibazo: “Bafite amatungo angahe?” Andika ibisubizo ku buryo bukurikira:

- Niba urugo nta bworozi rufite, shyira akamenyetso kuri “B. Barahinze ariko nta matungo bafite”
- Niba urugo rufite ubworozi bumwe, shyira akamenyetso kuri “C. Barahinze, n'itungo rimwe”
- Niba urugo rufite amatungo abiri cyangwa hejuru, shyira akamenyetso kuri “D. Barahinze, n'amatungo abiri cyangwa hejuru”

| Mu mezi 12 ashize, hari umuntu wo muri uru rugo wahinze imyaka cyangwa ibindi bihingwa bigenewe kuribwa cyangwa gucuruzwa, woroye amatungo cyangwa ibinyamababa? | Bafite amatungo angahe? | Igisubizo |
|---|--------------------------------|------------------|
| Oya | Ntayo | A |
| Oya | Rimwe | A |
| Oya | Abiri cyangwa menshi | A |
| Yego | Ntayo | B |
| Yego | Rimwe | C |
| Yego | Abiri cyangwa menshi | D |

Ishusho ya 1: Imirongo y'ubukene (n'umurongo ugaragaza kimwe cya kabiri gikennye cyane muni y'100% ry'umurongo w'igihugu) n'amajisha y'ubukene ku Rwanda rwose no ku kubaka/kwemeza amatsinda y'inyigo, kun go no ku baturage, muri 2010–2011

| Agace gakurwaho amakuru y'inyigo | Umurongo Ingo | | Ingo zabaruwe | % bafite imibereho iri muni y'umurongo w'ubukene | | | | Icya kabiri gikennye cyane muni y'100% ry'umurongo w'igihugu |
|---------------------------------------|--|-------------------|---------------|--|------|------|------|--|
| | cyangwa Ijanisha | cyangwa Abaturage | | Ku rwego rw'igihugu | | | | |
| | | | | Ibiribwa | 100% | 150% | 200% | |
| <u>Mu Rwanda hose</u> | Umurongo | | | 282 | 402 | 602 | 803 | 246 |
| | Ijanisha | Ingo | 14,308 | 20.6 | 40.2 | 63.3 | 75.8 | 19.3 |
| | Ijanisha | Abaturage | | 24.1 | 44.9 | 67.7 | 79.0 | 22.5 |
| <u>Kubaka/gukora no guhuza</u> | (Gutoranya ibipimo n'ingano, ndetse no guhuza amanota n'inzego zagaragaye) | | | | | | | |
| | Ijanisha | Ingo | 7,195 | 20.5 | 40.2 | 63.3 | 75.8 | 19.5 |
| <u>Kwemeza agaciro</u> | (Gupima ireme) | | | | | | | |
| | Ijanisha | Ingo | 7,113 | 20.7 | 40.2 | 63.3 | 75.8 | 19.2 |

Inkomoko: EICV y'u Rwanda ya 2010/11.

Imirongo y'ubukene iri mu mafaranga y'u Rwanda mu cyegeranyo cy'ibiciro ku Rwanda rwose kuva mu Gushyamba 2010 kugera mu Kwakira 2011.

Imirongo y'igihugu ibariye ku muntu mukuru-urugero rumwe ku muni.

Umurongo werekana kimwe cya kabiri gikennye cyane cy'abantu bari muni y'100% ry'umurongo w'igihugu ubariye ku muturage ku muni.

Ishusho ya 1: Imirongo w'ubukene ku rwego rw'isi PPP2005 n'amajanja y'ubukene ku Rwanda rwose no ku kubaka/kwegeranya amatsinda y'inyigo, kun go no ku baturage, mu 2010–2011

| Agace gakurwaho amakuru y'inyigo | Umurongo | Ingo | Ingo zabaruwe | Igipimo cy'ubwiyongere bw'ubukungu 2005 | | | | | |
|--|------------------|-------------------|---------------|---|--------|--------|--------|--------|--------|
| | cyangwa Ijanisha | cyangwa Abaturage | | \$1.25 | \$2.00 | \$2.50 | \$4.00 | \$5.00 | \$8.44 |
| <u>Mu Rwanda hose</u> | Umurongo | | | 480 | 768 | 961 | 1,537 | 1,921 | 3,243 |
| | Ijanisha | Ingo | 14,308 | 57.3 | 78.0 | 84.3 | 91.9 | 94.1 | 97.3 |
| | Ijanisha | Abaturage | | 61.7 | 80.9 | 86.4 | 93.0 | 95.1 | 97.9 |
| <u>Kubaka/gukora no guhuza (Gutoranya ibipimo n'ingano, ndetse no guhuza amanota n'inzego zagaragaye)</u> | | | | | | | | | |
| | Ijanisha | Ingo | 7,195 | 57.3 | 78.1 | 84.2 | 92.0 | 94.2 | 97.4 |
| <u>Kwemeza agaciro (Gupima ireme)</u> | | | | | | | | | |
| | Ijanisha | Ingo | 7,113 | 57.3 | 77.9 | 84.4 | 91.9 | 94.0 | 97.2 |

Inkomoko: EICV y'u Rwanda ya 2010/11.

Imirongo y'ubukene iri mu mafaranga y'u Rwanda mu cyegeranyo cy'ibiciro ku Rwanda rwose kuva mu Gushyamba 2010 kugera mu Kwakira 2011.

Ishusho ya 2: Imirongo y'ubukene n'amajanja y'ubukene ku Rwanda rwose no ku Ntara, kungu no ku baturage, mu 2010–2011

| Umurongo w'ubukene mu gace | Umurongo cyangwa Ijanisha | Ingo cyangwa Abaturage | n | Umurongo w'ubukene | | | | | | | | | |
|------------------------------|---------------------------|------------------------|--------|---------------------|------|------|------|--|---|--------|--------|--------|--------|
| | | | | Ku rwego rw'igihugu | | | | Icyamba kabiri gikennye cyane munsu y'100% ry'umurongo w'igihugu | Igipimo cy'ubwiyongere bw'ubukungu 2005 | | | | |
| | | | | Ibiribwa | 100% | 150% | 200% | | \$1.25 | \$2.00 | \$2.50 | \$5.00 | \$8.44 |
| <u>Mu Rwanda hose</u> | Umurongo | | | 282 | 402 | 602 | 803 | 246 | 480 | 768 | 961 | 1,921 | 3,243 |
| | Ijanisha | Ingo | 14,308 | 20.6 | 40.2 | 63.3 | 75.8 | 19.3 | 57.3 | 78.0 | 84.3 | 94.1 | 97.3 |
| | Ijanisha | Abaturage | | 24.1 | 44.9 | 67.7 | 79.0 | 22.5 | 61.7 | 80.9 | 86.4 | 95.1 | 97.9 |
| <u>Kigali</u> | Umurongo | | | 322 | 458 | 687 | 916 | 293 | 548 | 877 | 1,096 | 2,192 | 3,700 |
| | Ijanisha | Ingo | 1,348 | 6.1 | 14.0 | 27.1 | 36.3 | 6.7 | 24.0 | 38.8 | 47.7 | 70.3 | 83.9 |
| | Ijanisha | Abaturage | | 7.8 | 16.8 | 30.9 | 40.0 | 8.4 | 27.7 | 42.9 | 51.7 | 73.3 | 86.7 |
| <u>Amajyepfo</u> | Umurongo | | | 285 | 405 | 607 | 810 | 243 | 484 | 775 | 969 | 1,937 | 3,270 |
| | Ijanisha | Ingo | 3,840 | 26.8 | 50.5 | 74.9 | 86.1 | 24.4 | 69.0 | 87.7 | 91.8 | 97.7 | 99.1 |
| | Ijanisha | Abaturage | | 31.1 | 56.5 | 79.5 | 89.3 | 28.3 | 73.9 | 90.5 | 93.7 | 98.1 | 99.3 |
| <u>Iburengerazuba</u> | Umurongo | | | 277 | 394 | 591 | 788 | 235 | 471 | 754 | 943 | 1,886 | 3,183 |
| | Ijanisha | Ingo | 3,360 | 23.3 | 43.9 | 67.4 | 79.7 | 20.8 | 61.7 | 81.9 | 88.8 | 97.0 | 99.0 |
| | Ijanisha | Abaturage | | 27.4 | 48.4 | 71.1 | 82.0 | 24.2 | 65.5 | 83.7 | 90.0 | 97.4 | 99.2 |
| <u>Amajyaruguru</u> | Umurongo | | | 258 | 367 | 550 | 733 | 228 | 438 | 701 | 877 | 1,753 | 2,960 |
| | Ijanisha | Ingo | 2,400 | 20.0 | 38.7 | 62.7 | 76.9 | 18.5 | 56.1 | 79.1 | 85.6 | 96.0 | 98.0 |
| | Ijanisha | Abaturage | | 23.5 | 42.8 | 66.6 | 79.3 | 21.4 | 60.3 | 81.1 | 86.5 | 96.0 | 98.1 |
| <u>Iburasirazuba</u> | Umurongo | | | 289 | 410 | 616 | 821 | 257 | 491 | 786 | 982 | 1,964 | 3,315 |
| | Ijanisha | Ingo | 3,360 | 18.0 | 38.2 | 62.8 | 77.0 | 18.5 | 55.8 | 79.8 | 86.5 | 96.1 | 98.9 |
| | Ijanisha | Abaturage | | 20.8 | 42.6 | 67.8 | 80.9 | 21.3 | 60.4 | 83.4 | 89.1 | 97.4 | 99.4 |

Inkomoko: EICV y'u Rwanda ya 2010/11.

**Amashusho ya 100% ry'umurongo w'ubukene w'igihugu
(n'amashusho arebana n'imirongo y'ubukene yose)**

Ishusho ya 4 (100% ry'umurongo w'igihugu): Urugero rwemejwe ubukene buriho ruhujwe n'ibyiciro

| Niba icyiciro cy'urugo ari . . . | . . . hanyuma urugero (%) rwo kuba munsi y'umurongo w'ubukene |
|-------------------------------------|--|
| 0-4 | 99.5 |
| 5-9 | 93.4 |
| 10-14 | 90.3 |
| 15-19 | 83.2 |
| 20-24 | 71.2 |
| 25-29 | 63.0 |
| 30-34 | 50.2 |
| 35-39 | 34.7 |
| 40-44 | 27.7 |
| 45-49 | 17.0 |
| 50-54 | 11.0 |
| 55-59 | 6.0 |
| 60-64 | 2.0 |
| 65-69 | 0.9 |
| 70-74 | 0.0 |
| 75-79 | 0.0 |
| 80-84 | 0.0 |
| 85-89 | 0.0 |
| 90-94 | 0.0 |
| 95-100 | 0.0 |

Ishusho ya 5 (100% ry'umurongo w'igihugu): Inkomoko y'urugero rwemejwe rw'ubukene ihujwe n'ibyiciro

| Icyiciro | Ingo zirebwa | | Ingo zose zirebwa n'ubushakashatsi | Ingo zishobora guhura n'ikibazo cy'ubukene (%) |
|----------|---|---|---------------------------------------|--|
| | n'ubushakashatsi ziri no munsu y'umurongo w'ubukene | | | |
| 0-4 | 349 | ÷ | 350 | = 99.5 |
| 5-9 | 1,368 | ÷ | 1,465 | = 93.4 |
| 10-14 | 3,749 | ÷ | 4,153 | = 90.3 |
| 15-19 | 5,955 | ÷ | 7,155 | = 83.2 |
| 20-24 | 6,820 | ÷ | 9,584 | = 71.2 |
| 25-29 | 7,024 | ÷ | 11,141 | = 63.0 |
| 30-34 | 5,815 | ÷ | 11,575 | = 50.2 |
| 35-39 | 4,298 | ÷ | 12,381 | = 34.7 |
| 40-44 | 2,893 | ÷ | 10,445 | = 27.7 |
| 45-49 | 1,461 | ÷ | 8,571 | = 17.0 |
| 50-54 | 746 | ÷ | 6,777 | = 11.0 |
| 55-59 | 270 | ÷ | 4,518 | = 6.0 |
| 60-64 | 79 | ÷ | 4,037 | = 2.0 |
| 65-69 | 26 | ÷ | 2,796 | = 0.9 |
| 70-74 | 0 | ÷ | 1,518 | = 0.0 |
| 75-79 | 0 | ÷ | 1,510 | = 0.0 |
| 80-84 | 0 | ÷ | 1,246 | = 0.0 |
| 85-89 | 0 | ÷ | 603 | = 0.0 |
| 90-94 | 0 | ÷ | 69 | = 0.0 |
| 95-100 | 0 | ÷ | 107 | = 0.0 |

Umubare w'ingo zose wahujwe kugira ngo haboneke 100.000

Ishusho ya 6 (100% ry’umurongo w’igihugu): Kuri buri cyiciro, icyegeranyo cy’amatandukaniro hagati y’imiterere y’ubukene yemejwe n’imiterere y’ubukene nyayo kun go, hanwe n’imyitangirizwa y’icyizere, kuva kuri *bootstraps* 1,000 za $n = 16,384$, ikarita y’icyiciro ya 2010–2011 ikoreshejwe ku itsinda ryo kwemeza

| Icyiciro | Ikigereranyo ukuyemo agaciro nyako | | | |
|----------|------------------------------------|--|-------------|-------------|
| | Ikinyuranyo | Ikigereranyo cyizewe (\pm ijanisha) | | |
| | | 90 ku ijana | 95 ku ijana | 99 ku ijana |
| 0–4 | –0.5 | 0.2 | 0.2 | 0.2 |
| 5–9 | +0.9 | 2.9 | 3.5 | 4.5 |
| 10–14 | +1.1 | 2.0 | 2.2 | 3.1 |
| 15–19 | +3.2 | 2.2 | 2.6 | 3.6 |
| 20–24 | +3.4 | 2.6 | 3.1 | 4.4 |
| 25–29 | +8.7 | 2.6 | 3.2 | 4.3 |
| 30–34 | –2.0 | 2.4 | 3.0 | 4.0 |
| 35–39 | –2.2 | 2.4 | 2.9 | 3.8 |
| 40–44 | –2.9 | 2.8 | 3.4 | 4.3 |
| 45–49 | +0.2 | 1.8 | 2.2 | 2.7 |
| 50–54 | –7.8 | 5.8 | 6.2 | 7.3 |
| 55–59 | +1.8 | 1.1 | 1.4 | 1.8 |
| 60–64 | +0.2 | 0.8 | 1.0 | 1.2 |
| 65–69 | –0.4 | 0.8 | 1.0 | 1.3 |
| 70–74 | –0.6 | 0.7 | 0.8 | 0.9 |
| 75–79 | 0.0 | 0.0 | 0.0 | 0.0 |
| 80–84 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85–89 | 0.0 | 0.0 | 0.0 | 0.0 |
| 90–94 | 0.0 | 0.0 | 0.0 | 0.0 |
| 95–100 | 0.0 | 0.0 | 0.0 | 0.0 |

Ishusho ya 7 (100% ry’umurongo w’ubukene): icyegeranyo cy’amatandukaniro hagati y’amajanja y’ubukene yemejwe n’imibare nyakuri ku itsinda mu gihe runaka, hamwe n’imyitangirizwa y’icyizere, kuri *bootstraps* 1,000 z’ingano z’amatsinda y’inyigo atandukanye, ikarita y’icyiciro ya 2010–2011 ikoreshejwe ku itsinda ryemeza

| Urugero ingano <i>n</i> | Ikigereranyo ukuyemo agaciro nyako | | | |
|-------------------------------|------------------------------------|--|-------------|-------------|
| | Ikinyuranyo | Ikigereranyo cyizewe (\pm ijanisha) | | |
| | | | 90 ku ijana | 95 ku ijana |
| 1 | +1.1 | 64.2 | 71.7 | 90.9 |
| 4 | +1.6 | 37.0 | 44.2 | 60.0 |
| 8 | +1.5 | 28.0 | 34.2 | 45.4 |
| 16 | +1.3 | 20.4 | 25.1 | 33.1 |
| 32 | +1.0 | 16.2 | 19.6 | 24.9 |
| 64 | +0.5 | 11.7 | 14.5 | 18.5 |
| 128 | +0.3 | 8.6 | 10.0 | 13.6 |
| 256 | +0.4 | 6.1 | 7.6 | 9.3 |
| 512 | +0.4 | 4.1 | 5.0 | 6.7 |
| 1,024 | +0.4 | 3.0 | 3.5 | 4.5 |
| 2,048 | +0.3 | 2.2 | 2.6 | 3.4 |
| 4,096 | +0.4 | 1.6 | 1.9 | 2.5 |
| 8,192 | +0.4 | 1.1 | 1.3 | 1.7 |
| 16,384 | +0.4 | 0.8 | 0.9 | 1.2 |

Ishusho ya 8 (Imirongo y'ubukene y'igihugu n'umurongo ugaragaza na kimwe cya kabiri gikennye cyane cy'abantu bari muni ry'100% ry'umurongo w'igihugu): icyegeranyo cy'amatandukaniro hagati y'imibare yemejwe n'imibare nyakuri ku majanisha y'ubukene ku itsinda ry'ingo mu gihe runaka, ihamya, na α igikubo cy'ihamya, ikarita y'icyiciro ya 2010–2011 ikoreshejwe ku itsinda ryo kwemeza

| | Umurongo w'ubukene | | | | |
|------------------------------------|---------------------|------|------|------|--|
| | Ku rwego rw'igihugu | | | | Icya kabiri gikennye cyane muni y'100% ry'umurongo w'igihugu |
| | Ibiribwa | 100% | 150% | 200% | |
| Ikigereranyo ukuyemo agaciro nyako | +0.2 | +0.4 | +1.5 | +2.2 | +0.3 |
| Guhamya ikinyuranyo | 0.7 | 0.8 | 0.7 | 0.6 | 0.7 |
| α igikuba ku ihamya | 1.31 | 1.23 | 1.07 | 1.08 | 1.35 |

Ibisubizo birebana n'ikarita y'icyiciro y'a 2010/11 byakoreshejwe ku matsinda y'inyigo yemeza.

Ibinyuranyo hagati y'ibyemejwe n'imibare nyayo bigaragara mu ngero fatizo z'amanota ku ijana.

Ihamya ripimwa nk'imyitangirizwa y'icyizere ya 90 ku ijana mu ngero fatizo z'amanota \pm percentage ku ijana.

Ibinyuranyo n'ihamya byemejwe kuva kuri bootstraps 1,000 hamwe na $n = 16,384$.

α yemejwe kuva ku matsinda ya *bootstraps* 1,000 ya $n = 256, 512, 1,024, 2,048, 4,096, 8,192, na 16,384$.

Ishusho ya 8 (Imirongo y'ubukene ku isi PPP2005): icyegeranyo cy'amatandukaniro hagati y'imibare yemejwe n'imibare nyakuri ku majanisha y'ubukene ku gihe runaka y'itsinda ry'ingo ku gihe runaka, ihamya, hamwe na α igikubo cy'ihamya, ikarita y'icyiciro ya 2010–2011 yakoreshejwe ku itsinda ryo kwemeza

| | Igipimo cy'ubwiyongere bw'ubukungu 2005 | | | | |
|------------------------------------|--|---------------|---------------|---------------|---------------|
| | \$1.25 | \$2.00 | \$2.50 | \$5.00 | \$8.44 |
| Ikigereranyo ukuyemo agaciro nyako | +1.1 | +2.0 | +1.8 | +1.0 | +0.2 |
| Guhamya ikinyuranyo | 0.7 | 0.6 | 0.5 | 0.3 | 0.3 |
| α igikuba ku ihamya | 1.08 | 1.03 | 1.14 | 1.12 | 1.20 |

Ibisubizo birebana n'ikarita y'icyiciro y'a 2010/11 byakoreshejwe ku matsinda y'inyigo yemeza.

Ibinyuranyo hagati y'ibyemejwe n'imibare nyayo bigaragara mu ngero fatizo z'amanota ku ijana.

Ihamya ripimwa nk'imyitangirizwa y'icyizere ya 90 ku ijana mu ngero fatizo z'amanota \pm percentage ku ijana.

Ibinyuranyo n'ihamya byemejwe kuva kuri bootstraps 1,000 hamwe na $n = 16,384$.

α yemejwe kuva ku matsinda ya bootstraps 1,000 ya $n = 256, 512, 1,024, 2,048, 4,096, 8,192, na 16,384$.

Ishusho ya 9 (Imirongo y'ubukene yose): Ibyinjira bishoboka ku irasantego

| | | <u>Irasantego ku gace</u> | |
|------------------------------|------------------------------------|---|---|
| | | <u>Zakoreweho ubushakashatsi</u> | <u>Zitakoreweho ubushakashatsi</u> |
| <u>Imiterere nyayo y'ubi</u> | <u>Munsi y'umurongo w'ubukene</u> | <p><u>Ibyashyizwemo:</u> $<$ Umurongo w'ubukene washyizwe mu irasantego nta kwibeshya</p> | <p><u>Ibiri munsi:</u> $<$ Umurongo w'ubukene utarashyizwe mu irasantego habayeho kwibeshya</p> |
| | <u>Hejuru y'umurongo w'ubukene</u> | <p><u>Ibyibeshyweho:</u> \geq Umurongo w'ubukene washyizwe mu habayeho kwibeshya</p> | <p><u>Ibyakuwemo:</u> \geq Umurongo w'ubukene utarashyizwe mu irasantego nta kwibeshya</p> |

Ishusho ya 10 (100% ry'umurongo w'igihugu): Amajanisha y'ingo ku cyiciro cyo ku murongo wafatiweho no gushyira mu byiciro ku irasantego, hamwe n'ijanisha ryo hejuru, na BPAC, ikarita y'icyiciro ya 2010–2011 ku itsinda ry'inyigo ryo kwemeza

| Umubare ntarengwa | <u>Ibyashyizwemo:</u> | <u>Ibiri muni:</u> | <u>Ibyibeshyeho:</u> | <u>Ibyakuwemo:</u> | <u>Ikigero</u> | <u>BPAC</u> |
|----------------------|--|---|---|---|--|---------------------|
| | <Umurongo w'ubukene washyizwe mu irasantego nta kwibeshya | < Umurongo w'ubukene utarashyizwe mu irasantego habayeho kwibeshya | ≥ Umurongo w'ubukene washyizwe mu habayeho kwibeshya | ≥ Umurongo w'ubukene utarashyizwe mu irasantego nta kwibeshya | cy'ibyashobotse: Ibyashyizwemo + Ibyakuwemo | Reba ibyanditswe |
| ≤4 | 0.4 | 39.8 | 0.0 | 59.7 | 60.1 | -98.3 |
| ≤9 | 1.7 | 38.5 | 0.1 | 59.6 | 61.3 | -91.2 |
| ≤14 | 5.3 | 34.9 | 0.7 | 59.0 | 64.3 | -72.0 |
| ≤19 | 11.0 | 29.2 | 2.1 | 57.6 | 68.6 | -39.9 |
| ≤24 | 17.8 | 22.4 | 4.9 | 54.8 | 72.5 | +0.7 |
| ≤29 | 24.7 | 15.5 | 9.1 | 50.6 | 75.3 | +45.7 |
| ≤34 | 30.4 | 9.8 | 15.0 | 44.7 | 75.1 | +62.6 |
| ≤39 | 34.9 | 5.3 | 22.9 | 36.8 | 71.6 | +42.9 |
| ≤44 | 37.6 | 2.6 | 30.7 | 29.1 | 66.6 | +23.7 |
| ≤49 | 39.0 | 1.2 | 37.8 | 21.9 | 60.9 | +5.9 |
| ≤54 | 39.8 | 0.4 | 43.8 | 15.9 | 55.7 | -9.0 |
| ≤59 | 40.0 | 0.1 | 48.1 | 11.6 | 51.7 | -19.6 |
| ≤64 | 40.1 | 0.1 | 52.0 | 7.7 | 47.8 | -29.5 |
| ≤69 | 40.2 | 0.0 | 54.8 | 4.9 | 45.1 | -36.3 |
| ≤74 | 40.2 | 0.0 | 56.3 | 3.4 | 43.6 | -40.0 |
| ≤79 | 40.2 | 0.0 | 57.8 | 1.9 | 42.1 | -43.8 |
| ≤84 | 40.2 | 0.0 | 59.0 | 0.7 | 40.9 | -46.9 |
| ≤89 | 40.2 | 0.0 | 59.6 | 0.1 | 40.3 | -48.4 |
| ≤94 | 40.2 | 0.0 | 59.7 | 0.0 | 40.2 | -48.6 |
| ≤100 | 40.2 | 0.0 | 59.8 | -0.1 | 40.1 | -48.8 |

Ibyashyizwemo, ibiri muni, ibyibeshyeho, n'ibyakuwemo bigahuzwa kugira ngo bigere ku 100.

Ishusho ya 11 (100% ry’umurongo w’igihugu): Umugabane w’ingo zose zo mu irasantego (ni ukuvuga, icyiciro cyo ku murongo wafatiweho cyangwa mu nsi yawo), umugabane w’ingo zo mu irasantego zikennye (ni ukuvuga, zifite imibereho iri muni y’umurongo w’ubukene), umugabane w’ingo zikennye zashyizwe mu irasantego, n’umubare w’ingo zikennye zagize intsinzi mu irasantego (mo imbere) ku ngo zidakennye zashyizwe mu irasantego byo kwibeshya ku ikarita y’icyiciro ya 2010–2011 ikoreshejwe ku itsinda ry’inyigo yo kwemeza

| % ry'ingo zose zakoreweho ubushakashatsi | % ry'ingo zakoreweho ubushakashatsi zikennye | % ry'ingo zikennye zakoreweho ubushakashatsi | Ingo zikennye zakoreweho ubushakashatsi ugereranyije n'ingo zidakennye zakoreweho ubushakashatsi |
|---|---|---|---|
| 0.4 | 100.0 | 0.9 | Izikennye gusa ni zo zakoreweho ubushakashatsi |
| 1.8 | 94.0 | 4.2 | 15.7:1 |
| 6.0 | 88.5 | 13.1 | 7.7:1 |
| 13.1 | 83.9 | 27.4 | 5.2:1 |
| 22.7 | 78.2 | 44.2 | 3.6:1 |
| 33.8 | 73.0 | 61.4 | 2.7:1 |
| 45.4 | 66.9 | 75.6 | 2.0:1 |
| 57.8 | 60.3 | 86.6 | 1.5:1 |
| 68.2 | 55.1 | 93.5 | 1.2:1 |
| 76.8 | 50.8 | 97.0 | 1.0:1 |
| 83.6 | 47.6 | 98.9 | 0.9:1 |
| 88.1 | 45.4 | 99.5 | 0.8:1 |
| 92.2 | 43.5 | 99.8 | 0.8:1 |
| 94.9 | 42.3 | 99.9 | 0.7:1 |
| 96.5 | 41.7 | 99.9 | 0.7:1 |
| 98.0 | 41.0 | 99.9 | 0.7:1 |
| 99.2 | 40.5 | 99.9 | 0.7:1 |
| 99.8 | 40.3 | 99.9 | 0.7:1 |
| 99.9 | 40.2 | 99.9 | 0.7:1 |
| 100.0 | 40.2 | 99.9 | 0.7:1 |

**Imbonerahamwe
z'umurongo w'ubukene ku biribwa**

Ishusho ya 4 (umurongo w'ubukene ku biribwa): Urugero rwemejwe ubukene buriho ruhujwe n'ibyiciro

| Niba icyiciro . . . hanyuma urugero (%) rwo kuba cy'urugo ari . . . | . . . hanyuma urugero (%) rwo kuba muni y'umurongo w'ubukene |
|--|---|
| 0-4 | 98.3 |
| 5-9 | 77.2 |
| 10-14 | 72.0 |
| 15-19 | 57.3 |
| 20-24 | 38.7 |
| 25-29 | 28.8 |
| 30-34 | 19.3 |
| 35-39 | 14.0 |
| 40-44 | 9.2 |
| 45-49 | 5.0 |
| 50-54 | 2.7 |
| 55-59 | 0.6 |
| 60-64 | 0.4 |
| 65-69 | 0.2 |
| 70-74 | 0.0 |
| 75-79 | 0.0 |
| 80-84 | 0.0 |
| 85-89 | 0.0 |
| 90-94 | 0.0 |
| 95-100 | 0.0 |

Ishusho ya 6 (umurongo w’ubukene ku biribwa): Kuri buri cyiciro, icyegeranyo cy’amatandukaniro hagati y’imiterere y’ubukene yemejwe n’imiterere y’ubukene nyayo kun go, hanwe n’imyitangirizwa y’icyizere, kuva kuri *bootstraps* 1,000 za $n = 16,384$, ikarita y’icyiciro ya 2010–2011 ikoreshejwe ku itsinda ryo kwemeza

| Icyiciro | Ikigereranyo ukuyemo agaciro nyako | | | |
|----------|------------------------------------|--|-------------|-------------|
| | Ikinyuranyo | Ikigereranyo cyizewe (\pm ijanisha) | | |
| | | 90 ku ijana | 95 ku ijana | 99 ku ijana |
| 0–4 | +2.2 | 4.4 | 4.9 | 6.1 |
| 5–9 | +3.2 | 5.0 | 5.9 | 7.7 |
| 10–14 | +8.8 | 4.4 | 5.1 | 7.0 |
| 15–19 | +0.6 | 2.6 | 3.2 | 4.1 |
| 20–24 | +5.6 | 2.6 | 3.1 | 4.1 |
| 25–29 | +1.9 | 2.1 | 2.5 | 3.3 |
| 30–34 | -3.3 | 2.9 | 3.1 | 3.7 |
| 35–39 | -4.6 | 3.5 | 3.8 | 4.1 |
| 40–44 | -2.5 | 2.4 | 2.7 | 3.5 |
| 45–49 | +2.0 | 0.8 | 0.9 | 1.2 |
| 50–54 | +0.8 | 0.6 | 0.7 | 0.9 |
| 55–59 | -0.2 | 0.6 | 0.7 | 0.9 |
| 60–64 | +0.3 | 0.2 | 0.2 | 0.3 |
| 65–69 | -0.6 | 0.7 | 0.9 | 1.1 |
| 70–74 | 0.0 | 0.0 | 0.0 | 0.0 |
| 75–79 | 0.0 | 0.0 | 0.0 | 0.0 |
| 80–84 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85–89 | 0.0 | 0.0 | 0.0 | 0.0 |
| 90–94 | 0.0 | 0.0 | 0.0 | 0.0 |
| 95–100 | 0.0 | 0.0 | 0.0 | 0.0 |

Ishusho ya 7 (umurongo w'ubukene ku biribwa): icyegeranyo cy'amatandukaniro hagati y'amajanisha y'ubukene yemejwe n'imibare nyakuri ku itsinda mu gihe runaka, hamwe n'imyitangirizwa y'icyizere, kuri *bootstraps* 1,000 z'ingano z'amatsinda y'inyigo atandukanye, ikarita y'icyiciro ya 2010–2011 ikoreshejwe ku itsinda ryemeza

| Urugero ingano <i>n</i> | Ikigereranyo ukuyemo agaciro nyako | | | |
|-------------------------------|------------------------------------|--|-------------|-------------|
| | Ikinyuranyo | Ikigereranyo cyizewe (\pm ijanisha) | | |
| | | | 90 ku ijana | 95 ku ijana |
| 1 | +1.1 | 55.0 | 71.6 | 84.0 |
| 4 | +1.8 | 31.8 | 39.8 | 53.8 |
| 8 | +1.5 | 22.9 | 29.9 | 40.6 |
| 16 | +1.2 | 18.0 | 21.9 | 29.3 |
| 32 | +0.5 | 13.7 | 16.0 | 20.9 |
| 64 | +0.3 | 9.9 | 11.8 | 15.1 |
| 128 | +0.2 | 7.2 | 8.8 | 12.2 |
| 256 | +0.2 | 5.5 | 6.6 | 8.5 |
| 512 | +0.2 | 3.8 | 4.5 | 6.1 |
| 1,024 | +0.2 | 2.7 | 3.1 | 4.2 |
| 2,048 | +0.2 | 1.9 | 2.3 | 2.9 |
| 4,096 | +0.2 | 1.3 | 1.5 | 2.1 |
| 8,192 | +0.2 | 1.0 | 1.1 | 1.5 |
| 16,384 | +0.2 | 0.7 | 0.8 | 1.1 |

Ishusho ya 10 (umurongo w'ubukene ku biribwa): Amajanisha y'ingo ku cyiciro cyo ku murongo wafatiweho no gushyira mu byiciro ku irasantego, hamwe n'ijanisha ryo hejuru, na BPAC, ikarita y'icyiciro ya 2010–2011 ku itsinda ry'inyigo ryo kwemeza

| Umubare ntarengwa | <u>Ibyashyizwemo:</u> | <u>Ibiri muni:</u> | <u>Ibyibeshyweho:</u> | <u>Ibyakuwemo:</u> | <u>Ikigero</u> | <u>BPAC</u> |
|----------------------|--|---|---|---|--|---------------------|
| | <Umurongo w'ubukene washyizwe mu irasantego nta kwibeshya | < Umurongo w'ubukene utarashyizwe mu irasantego habayeho kwibeshya | ≥ Umurongo w'ubukene washyizwe mu habayeho kwibeshya | ≥ Umurongo w'ubukene utarashyizwe mu irasantego nta kwibeshya | cy'ibyashobotse: Ibyashyizwemo + Ibyakuwemo | Reba ibyanditswe |
| ≤4 | 0.3 | 20.3 | 0.0 | 79.2 | 79.6 | -96.7 |
| ≤9 | 1.4 | 19.2 | 0.4 | 78.8 | 80.2 | -84.4 |
| ≤14 | 4.2 | 16.5 | 1.8 | 77.4 | 81.6 | -50.9 |
| ≤19 | 8.1 | 12.6 | 5.0 | 74.2 | 82.3 | +2.7 |
| ≤24 | 11.6 | 9.0 | 11.1 | 68.2 | 79.8 | +46.4 |
| ≤29 | 15.0 | 5.7 | 18.9 | 60.4 | 75.4 | +8.7 |
| ≤34 | 17.4 | 3.3 | 28.0 | 51.2 | 68.6 | -35.7 |
| ≤39 | 19.2 | 1.4 | 38.6 | 40.7 | 59.9 | -86.7 |
| ≤44 | 20.2 | 0.5 | 48.1 | 31.2 | 51.3 | -132.8 |
| ≤49 | 20.4 | 0.2 | 56.4 | 22.8 | 43.3 | -173.0 |
| ≤54 | 20.6 | 0.1 | 63.0 | 16.2 | 36.8 | -205.1 |
| ≤59 | 20.6 | 0.0 | 67.5 | 11.7 | 32.4 | -226.8 |
| ≤64 | 20.6 | 0.0 | 71.5 | 7.7 | 28.4 | -246.3 |
| ≤69 | 20.7 | 0.0 | 74.3 | 4.9 | 25.6 | -259.7 |
| ≤74 | 20.7 | 0.0 | 75.8 | 3.4 | 24.1 | -267.0 |
| ≤79 | 20.7 | 0.0 | 77.3 | 1.9 | 22.6 | -274.4 |
| ≤84 | 20.7 | 0.0 | 78.6 | 0.7 | 21.3 | -280.4 |
| ≤89 | 20.7 | 0.0 | 79.2 | 0.1 | 20.7 | -283.3 |
| ≤94 | 20.7 | 0.0 | 79.2 | 0.0 | 20.7 | -283.7 |
| ≤100 | 20.7 | 0.0 | 79.3 | -0.1 | 20.5 | -284.2 |

Ibyashyizwemo, ibiri muni, ibyibeshyweho, n'ibyakuwemo bigahuzwa kugira ngo bigere ku 100.

Ishusho ya 11 (umurongo w'ubukene ku biribwa): Umugabane w'ingo zose zo mu irasantego (ni ukuvuga, icyiciro cyo ku murongo wafatiweho cyangwa mu nsi yawo), umugabane w'ingo zo mu irasantego zikennye (ni ukuvuga, zifite imibereho iri muni y'umurongo w'ubukene), umugabane w'ingo zikennye zashyizwe mu irasantego, n'umubare w'ingo zikennye zagize intsinzi mu irasantego (mo imbere) ku ngo zidakennye zashyizwe mu irasantego byo kwibeshya ku ikarita y'icyiciro ya 2010–2011 ikoreshejwe ku itsinda ry'inyigo yo kwemeza

| <u>% ry'ingo zose zakoreweho ubushakashatsi</u> | <u>% ry'ingo zakoreweho ubushakashatsi zikennye</u> | <u>% ry'ingo zikennye zakoreweho ubushakashatsi</u> | <u>Ingo zikennye zakoreweho ubushakashatsi ugereranyije n'ingo zidakennye zakoreweho ubushakashatsi</u> |
|---|---|---|---|
| 0.4 | 96.1 | 1.6 | 24.7:1 |
| 1.8 | 77.7 | 6.8 | 3.5:1 |
| 6.0 | 69.7 | 20.1 | 2.3:1 |
| 13.1 | 61.6 | 39.1 | 1.6:1 |
| 22.7 | 51.2 | 56.2 | 1.0:1 |
| 33.8 | 44.3 | 72.5 | 0.8:1 |
| 45.4 | 38.3 | 84.1 | 0.6:1 |
| 57.8 | 33.3 | 93.1 | 0.5:1 |
| 68.2 | 29.5 | 97.5 | 0.4:1 |
| 76.8 | 26.6 | 98.8 | 0.4:1 |
| 83.6 | 24.6 | 99.6 | 0.3:1 |
| 88.1 | 23.4 | 99.7 | 0.3:1 |
| 92.2 | 22.4 | 99.8 | 0.3:1 |
| 94.9 | 21.8 | 99.9 | 0.3:1 |
| 96.5 | 21.4 | 99.9 | 0.3:1 |
| 98.0 | 21.1 | 99.9 | 0.3:1 |
| 99.2 | 20.8 | 99.9 | 0.3:1 |
| 99.8 | 20.7 | 99.9 | 0.3:1 |
| 99.9 | 20.7 | 99.9 | 0.3:1 |
| 100.0 | 20.7 | 99.9 | 0.3:1 |

Imbonerahamwe
ku 150% ry'umurongo w'igihugu w'ubukene

**Ishusho ya 4 (150% ry'umurongo w'igihugu): Urugero rwemejwe
ubukene buriho ruhujwe n'ibyiciro**

| Niba icyiciro . . . cy'urugo ari . . . | . . . hanyuma urugero (%) rwo kuba munsi y'umurongo w'ubukene |
|---|--|
| 0-4 | 100.0 |
| 5-9 | 98.1 |
| 10-14 | 97.7 |
| 15-19 | 95.6 |
| 20-24 | 91.0 |
| 25-29 | 90.6 |
| 30-34 | 83.0 |
| 35-39 | 70.5 |
| 40-44 | 58.4 |
| 45-49 | 45.1 |
| 50-54 | 30.5 |
| 55-59 | 25.4 |
| 60-64 | 14.0 |
| 65-69 | 7.3 |
| 70-74 | 3.6 |
| 75-79 | 1.3 |
| 80-84 | 0.5 |
| 85-89 | 0.4 |
| 90-94 | 0.0 |
| 95-100 | 0.0 |

Ishusho ya 6 (150% ry’umurongo w’igihugu): Kuri buri cyiciro, icyegeranyo cy’amatandukaniro hagati y’imiterere y’ubukene yemejwe n’imiterere y’ubukene nyayo kun go, hanwe n’imyitangirizwa y’icyizere, kuva kuri *bootstraps* 1,000 za $n = 16,384$, ikarita y’icyiciro ya 2010–2011 ikoreshejwe ku itsinda ryo kwemeza

| Icyiciro | Ikigereranyo ukuyemo agaciro nyako | | | |
|----------|------------------------------------|--|-------------|-------------|
| | Ikinyuranyo | Ikigereranyo cyizewe (\pm ijanisha) | | |
| | | 90 ku ijana | 95 ku ijana | 99 ku ijana |
| 0–4 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5–9 | –1.9 | 0.9 | 0.9 | 0.9 |
| 10–14 | 0.0 | 0.8 | 1.0 | 1.4 |
| 15–19 | +1.7 | 1.2 | 1.5 | 1.9 |
| 20–24 | –1.8 | 1.4 | 1.5 | 1.8 |
| 25–29 | +3.4 | 1.9 | 2.2 | 3.0 |
| 30–34 | +7.8 | 2.0 | 2.4 | 3.1 |
| 35–39 | –0.1 | 2.4 | 2.9 | 3.7 |
| 40–44 | +5.3 | 2.8 | 3.3 | 3.9 |
| 45–49 | –2.3 | 2.4 | 2.8 | 3.6 |
| 50–54 | –7.7 | 5.6 | 6.1 | 6.9 |
| 55–59 | +5.7 | 2.4 | 2.9 | 4.0 |
| 60–64 | +4.5 | 1.9 | 2.2 | 2.9 |
| 65–69 | +1.2 | 1.7 | 2.0 | 2.5 |
| 70–74 | –2.7 | 2.5 | 2.8 | 3.8 |
| 75–79 | –1.6 | 1.8 | 2.2 | 2.8 |
| 80–84 | –2.5 | 2.4 | 2.6 | 3.2 |
| 85–89 | +0.4 | 0.0 | 0.0 | 0.0 |
| 90–94 | 0.0 | 0.0 | 0.0 | 0.0 |
| 95–100 | 0.0 | 0.0 | 0.0 | 0.0 |

Ishusho ya 7 (150% ry’umurongo w’igihugu): icyegeranyo cy’amatandukaniro hagati y’amajanisha y’ubukene yemejwe n’imibare nyakuri ku itsinda mu gihe runaka, hamwe n’imyitangirizwa y’icyizere, kuri *bootstraps* 1,000 z’ingano z’amatsinda y’inyigo atandukanye, ikarita y’icyiciro ya 2010–2011 ikoreshejwe ku itsinda ryemeza

| Urugero ingano <i>n</i> | Ikigereranyo ukuyemo agaciro nyako | | | |
|-------------------------------|------------------------------------|--|-------------|-------------|
| | Ikinyuranyo | Ikigereranyo cyizewe (\pm ijanisha) | | |
| | | | 90 ku ijana | 95 ku ijana |
| 1 | +0.8 | 68.9 | 82.6 | 90.2 |
| 4 | +1.5 | 33.9 | 40.9 | 52.1 |
| 8 | +1.8 | 26.4 | 30.9 | 41.3 |
| 16 | +1.4 | 18.1 | 23.1 | 30.4 |
| 32 | +1.9 | 14.3 | 18.0 | 22.5 |
| 64 | +1.6 | 10.3 | 11.8 | 15.5 |
| 128 | +1.4 | 7.5 | 8.8 | 11.2 |
| 256 | +1.5 | 5.2 | 6.2 | 7.6 |
| 512 | +1.6 | 3.7 | 4.4 | 5.4 |
| 1,024 | +1.6 | 2.6 | 3.0 | 4.2 |
| 2,048 | +1.5 | 1.9 | 2.4 | 3.1 |
| 4,096 | +1.5 | 1.3 | 1.7 | 2.1 |
| 8,192 | +1.5 | 1.0 | 1.1 | 1.5 |
| 16,384 | +1.5 | 0.7 | 0.8 | 1.0 |

Ishusho ya 10 (150% ry'umurongo w'igihugu): Amajanisha y'ingo ku cyiciro cyo ku murongo wafatiweho no gushyira mu byiciro ku irasantego, hamwe n'ijanisha ryo hejuru, na BPAC, ikarita y'icyiciro ya 2010–2011 ku itsinda ry'inyigo ryo kwemeza

| Umubare ntarengwa | <u>Ibyashyizwemo:</u> | <u>Ibiri muni:</u> | <u>Ibyibeshyweho:</u> | <u>Ibyakuwemo:</u> | <u>Ikigero</u> | <u>BPAC</u> |
|----------------------|--|---|---|---|--|---------------------|
| | <Umurongo w'ubukene washyizwe mu irasantego nta kwibeshya | < Umurongo w'ubukene utarashyizwe mu irasantego habayeho kwibeshya | ≥ Umurongo w'ubukene washyizwe mu habayeho kwibeshya | ≥ Umurongo w'ubukene utarashyizwe mu irasantego nta kwibeshya | cy'ibyashobotse: Ibyashyizwemo + Ibyakuwemo | Reba ibyanditswe |
| ≤4 | 0.4 | 62.9 | 0.0 | 36.6 | 37.0 | -98.9 |
| ≤9 | 1.8 | 61.5 | 0.0 | 36.6 | 38.4 | -94.3 |
| ≤14 | 5.8 | 57.4 | 0.1 | 36.5 | 42.3 | -81.3 |
| ≤19 | 12.5 | 50.8 | 0.6 | 36.0 | 48.5 | -59.5 |
| ≤24 | 21.3 | 42.0 | 1.4 | 35.2 | 56.4 | -30.5 |
| ≤29 | 31.1 | 32.2 | 2.8 | 33.8 | 64.9 | +2.6 |
| ≤34 | 40.0 | 23.3 | 5.4 | 31.2 | 71.2 | +35.0 |
| ≤39 | 48.9 | 14.3 | 8.9 | 27.7 | 76.7 | +68.7 |
| ≤44 | 54.9 | 8.4 | 13.4 | 23.2 | 78.1 | +78.8 |
| ≤49 | 59.0 | 4.3 | 17.9 | 18.8 | 77.7 | +71.8 |
| ≤54 | 61.4 | 1.9 | 22.2 | 14.4 | 75.7 | +64.9 |
| ≤59 | 62.4 | 0.9 | 25.7 | 10.9 | 73.2 | +59.3 |
| ≤64 | 62.9 | 0.4 | 29.3 | 7.3 | 70.2 | +53.7 |
| ≤69 | 63.1 | 0.2 | 31.9 | 4.7 | 67.8 | +49.7 |
| ≤74 | 63.2 | 0.1 | 33.3 | 3.3 | 66.6 | +47.4 |
| ≤79 | 63.2 | 0.0 | 34.7 | 1.9 | 65.1 | +45.1 |
| ≤84 | 63.3 | 0.0 | 35.9 | 0.7 | 64.0 | +43.2 |
| ≤89 | 63.3 | 0.0 | 36.5 | 0.1 | 63.4 | +42.3 |
| ≤94 | 63.3 | 0.0 | 36.6 | 0.0 | 63.3 | +42.2 |
| ≤100 | 63.3 | 0.0 | 36.7 | -0.1 | 63.2 | +42.0 |

Ibyashyizwemo, ibiri muni, ibyibeshyweho, n'ibyakuwemo bigahuzwa kugira ngo bigere ku 100.

Ishusho ya 11 (150% ry’umurongo w’igihugu): Umugabane w’ingo zose zo mu irasantego (ni ukuvuga, icyiciro cyo ku murongo wafatiweho cyangwa mu nsi yawo), umugabane w’ingo zo mu irasantego zikennye (ni ukuvuga, zifite imibereho iri muni y’umurongo w’ubukene), umugabane w’ingo zikennye zashyizwe mu irasantego, n’umubare w’ingo zikennye zagize intsinzi mu irasantego (mo imbere) ku ngo zidakennye zashyizwe mu irasantego byo kwibeshya ku ikarita y’icyiciro ya 2010–2011 ikoreshejwe ku itsinda ry’inyigo yo kwemeza

| % ry'ingo zose zakoreweho ubushakashatsi | % ry'ingo zakoreweho ubushakashatsi zikennye | % ry'ingo zikennye zakoreweho ubushakashatsi | Ingo zikennye zakoreweho ubushakashatsi ugereranyije n'ingo zidakennye zakoreweho ubushakashatsi |
|---|---|---|---|
| 0.4 | 100.0 | 0.6 | Izikennye gusa ni zo zakoreweho ubushakashatsi |
| 1.8 | 100.0 | 2.9 | Izikennye gusa ni zo zakoreweho ubushakashatsi |
| 6.0 | 97.9 | 9.2 | 46.7:1 |
| 13.1 | 95.4 | 19.8 | 20.8:1 |
| 22.7 | 93.6 | 33.6 | 14.7:1 |
| 33.8 | 91.8 | 49.0 | 11.2:1 |
| 45.4 | 88.0 | 63.1 | 7.4:1 |
| 57.8 | 84.7 | 77.3 | 5.5:1 |
| 68.2 | 80.4 | 86.6 | 4.1:1 |
| 76.8 | 76.8 | 93.1 | 3.3:1 |
| 83.6 | 73.4 | 96.9 | 2.8:1 |
| 88.1 | 70.8 | 98.5 | 2.4:1 |
| 92.2 | 68.2 | 99.2 | 2.1:1 |
| 94.9 | 66.4 | 99.6 | 2.0:1 |
| 96.5 | 65.5 | 99.8 | 1.9:1 |
| 98.0 | 64.6 | 99.8 | 1.8:1 |
| 99.2 | 63.8 | 99.9 | 1.8:1 |
| 99.8 | 63.4 | 99.9 | 1.7:1 |
| 99.9 | 63.4 | 99.9 | 1.7:1 |
| 100.0 | 63.3 | 99.9 | 1.7:1 |

Imbonerahamwe
ku 200% ry'umurongo w'igihugu w'ubukene

Ishusho ya 4 (200% ry'umurongo w'igihugu): Urugero rwemejwe ubukene buriho ruhujwe n'ibyiciro

| Niba icyiciro . . . cy'urugo ari . . . | . . . hanyuma urugero (%) rwo kuba munsi y'umurongo w'ubukene |
|---|--|
| 0-4 | 100.0 |
| 5-9 | 99.2 |
| 10-14 | 99.1 |
| 15-19 | 98.3 |
| 20-24 | 96.9 |
| 25-29 | 96.1 |
| 30-34 | 94.4 |
| 35-39 | 87.1 |
| 40-44 | 78.9 |
| 45-49 | 67.8 |
| 50-54 | 56.3 |
| 55-59 | 42.8 |
| 60-64 | 27.8 |
| 65-69 | 18.6 |
| 70-74 | 9.9 |
| 75-79 | 7.2 |
| 80-84 | 4.9 |
| 85-89 | 1.0 |
| 90-94 | 0.0 |
| 95-100 | 0.0 |

Ishusho ya 6 (200% ry’umurongo w’igihugu): Kuri buri cyiciro, icyegeranyo cy’amatandukaniro hagati y’imiterere y’ubukene yemejwe n’imiterere y’ubukene nyayo kun go, hanwe n’imyitangirizwa y’icyizere, kuva kuri *bootstraps* 1,000 za $n = 16,384$, ikarita y’icyiciro ya 2010–2011 ikoreshejwe ku itsinda ryo kwemeza

| Icyiciro | Ikigereranyo ukuyemo agaciro nyako | | | |
|----------|------------------------------------|--|-------------|-------------|
| | Ikinyuranyo | Ikigereranyo cyizewe (\pm ijanisha) | | |
| | | 90 ku ijana | 95 ku ijana | 99 ku ijana |
| 0–4 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5–9 | –0.8 | 0.4 | 0.4 | 0.4 |
| 10–14 | –0.3 | 0.4 | 0.5 | 0.6 |
| 15–19 | –0.4 | 0.5 | 0.6 | 0.8 |
| 20–24 | –0.7 | 0.6 | 0.7 | 1.0 |
| 25–29 | –1.0 | 0.8 | 0.9 | 1.0 |
| 30–34 | +5.9 | 1.7 | 2.0 | 2.5 |
| 35–39 | +2.9 | 2.4 | 2.8 | 3.8 |
| 40–44 | +6.7 | 2.7 | 3.1 | 4.0 |
| 45–49 | +1.5 | 2.2 | 2.7 | 3.4 |
| 50–54 | –4.4 | 3.8 | 4.1 | 4.7 |
| 55–59 | +7.4 | 3.2 | 3.9 | 5.2 |
| 60–64 | +6.2 | 2.8 | 3.3 | 4.3 |
| 65–69 | +5.6 | 2.5 | 2.9 | 3.7 |
| 70–74 | –3.5 | 3.9 | 4.6 | 5.8 |
| 75–79 | +1.2 | 2.5 | 3.0 | 3.7 |
| 80–84 | +1.9 | 2.1 | 2.4 | 3.2 |
| 85–89 | –0.3 | 1.6 | 1.7 | 2.0 |
| 90–94 | 0.0 | 0.0 | 0.0 | 0.0 |
| 95–100 | 0.0 | 0.0 | 0.0 | 0.0 |

Ishusho ya 7 (200% ry’umurongo w’igihugu): icyegeranyo cy’amatandukaniro hagati y’amajanisha y’ubukene yemejwe n’imibare nyakuri ku itsinda mu gihe runaka, hamwe n’imyitangirizwa y’icyizere, kuri *bootstraps* 1,000 z’ingano z’amatsinda y’inyigo atandukanye, ikarita y’icyiciro ya 2010–2011 ikoreshejwe ku itsinda ryemeza

| Urugero ingano <i>n</i> | Ikigereranyo ukuyemo agaciro nyako | | | |
|-------------------------------|------------------------------------|--|-------------|-------------|
| | Ikinyuranyo | Ikigereranyo cyizewe (\pm ijanisha) | | |
| | | | 90 ku ijana | 95 ku ijana |
| 1 | +2.5 | 65.4 | 75.8 | 86.4 |
| 4 | +2.1 | 32.5 | 39.3 | 49.2 |
| 8 | +2.1 | 24.9 | 29.9 | 38.4 |
| 16 | +2.0 | 17.9 | 21.6 | 27.1 |
| 32 | +2.3 | 12.9 | 15.7 | 20.5 |
| 64 | +2.3 | 9.4 | 11.5 | 15.1 |
| 128 | +2.1 | 7.0 | 8.1 | 11.3 |
| 256 | +2.1 | 4.7 | 5.6 | 7.9 |
| 512 | +2.2 | 3.5 | 4.0 | 5.1 |
| 1,024 | +2.2 | 2.4 | 2.7 | 3.5 |
| 2,048 | +2.2 | 1.7 | 2.0 | 2.5 |
| 4,096 | +2.1 | 1.2 | 1.4 | 1.8 |
| 8,192 | +2.2 | 0.9 | 1.0 | 1.4 |
| 16,384 | +2.2 | 0.6 | 0.7 | 0.9 |

Ishusho ya 10 (200% ry'umurongo w'igihugu): Amajanisha y'ingo ku cyiciro cyo ku murongo wafatiweho no gushyira mu byiciro ku irasantego, hamwe n'ijanisha ryo hejuru, na BPAC, ikarita y'icyiciro ya 2010–2011 ku itsinda ry'inyigo ryo kwemeza

| Umubare ntarengwa | <u>Ibyashyizwemo:</u> | <u>Ibiri muni:</u> | <u>Ibyibeshyweho:</u> | <u>Ibyakuwemo:</u> | <u>Ikigero</u> | <u>BPAC</u> |
|----------------------|--|---|---|---|--|---------------------|
| | <Umurongo w'ubukene washyizwe mu irasantego nta kwibeshya | < Umurongo w'ubukene utarashyizwe mu irasantego habayeho kwibeshya | ≥ Umurongo w'ubukene washyizwe mu habayeho kwibeshya | ≥ Umurongo w'ubukene utarashyizwe mu irasantego nta kwibeshya | cy'ibyashobotse: Ibyashyizwemo + Ibyakuwemo | Reba ibyanditswe |
| ≤4 | 0.4 | 75.5 | 0.0 | 24.1 | 24.4 | -99.1 |
| ≤9 | 1.8 | 74.0 | 0.0 | 24.1 | 25.9 | -95.2 |
| ≤14 | 5.9 | 69.9 | 0.0 | 24.0 | 30.0 | -84.3 |
| ≤19 | 13.0 | 62.8 | 0.1 | 23.9 | 36.9 | -65.6 |
| ≤24 | 22.3 | 53.6 | 0.4 | 23.6 | 45.9 | -40.7 |
| ≤29 | 33.0 | 42.9 | 0.9 | 23.2 | 56.2 | -11.9 |
| ≤34 | 43.5 | 32.4 | 2.0 | 22.1 | 65.6 | +17.2 |
| ≤39 | 54.4 | 21.5 | 3.4 | 20.6 | 75.0 | +47.9 |
| ≤44 | 62.3 | 13.5 | 5.9 | 18.2 | 80.5 | +72.2 |
| ≤49 | 68.2 | 7.6 | 8.6 | 15.4 | 83.6 | +88.6 |
| ≤54 | 72.2 | 3.6 | 11.4 | 12.7 | 84.8 | +84.9 |
| ≤59 | 73.9 | 1.9 | 14.2 | 9.9 | 83.8 | +81.3 |
| ≤64 | 75.0 | 0.8 | 17.2 | 6.9 | 81.9 | +77.4 |
| ≤69 | 75.5 | 0.4 | 19.5 | 4.6 | 80.1 | +74.3 |
| ≤74 | 75.7 | 0.1 | 20.8 | 3.3 | 79.0 | +72.6 |
| ≤79 | 75.8 | 0.0 | 22.2 | 1.9 | 77.6 | +70.7 |
| ≤84 | 75.8 | 0.0 | 23.4 | 0.7 | 76.5 | +69.1 |
| ≤89 | 75.8 | 0.0 | 24.0 | 0.1 | 75.9 | +68.3 |
| ≤94 | 75.8 | 0.0 | 24.1 | 0.0 | 75.8 | +68.3 |
| ≤100 | 75.8 | 0.0 | 24.2 | -0.1 | 75.7 | +68.1 |

Ibyashyizwemo, ibiri muni, ibyibeshyweho, n'ibyakuwemo bigahuzwa kugira ngo bigere ku 100.

Ishusho ya 11 (200% ry'umurongo w'igihugu): Umugabane w'ingo zose zo mu irasantego (ni ukuvuga, icyiciro cyo ku murongo wafatiweho cyangwa mu nsi yawo), umugabane w'ingo zo mu irasantego zikennye (ni ukuvuga, zifite imibereho iri muni y'umurongo w'ubukene), umugabane w'ingo zikennye zashyizwe mu irasantego, n'umubare w'ingo zikennye zagize intsinzi mu irasantego (mo imbere) ku ngo zidakennye zashyizwe mu irasantego byo kwibeshya ku ikarita y'icyiciro ya 2010–2011 ikoreshejwe ku itsinda ry'inyigo yo kwemeza

| % ry'ingo zose zakoreweho ubushakashatsi | % ry'ingo zakoreweho ubushakashatsi zikennye | % ry'ingo zikennye zakoreweho ubushakashatsi | Ingo zikennye zakoreweho ubushakashatsi ugereranyije n'ingo zidakennye zakoreweho ubushakashatsi |
|---|---|---|---|
| 0.4 | 100.0 | 0.5 | Izikennye gusa ni zo zakoreweho ubushakashatsi |
| 1.8 | 100.0 | 2.4 | Izikennye gusa ni zo zakoreweho ubushakashatsi |
| 6.0 | 99.4 | 7.8 | 158.7:1 |
| 13.1 | 98.9 | 17.1 | 91.3:1 |
| 22.7 | 98.0 | 29.3 | 49.8:1 |
| 33.8 | 97.4 | 43.4 | 37.3:1 |
| 45.4 | 95.7 | 57.3 | 22.1:1 |
| 57.8 | 94.0 | 71.6 | 15.8:1 |
| 68.2 | 91.3 | 82.1 | 10.5:1 |
| 76.8 | 88.7 | 89.8 | 7.9:1 |
| 83.6 | 86.3 | 95.1 | 6.3:1 |
| 88.1 | 83.9 | 97.4 | 5.2:1 |
| 92.2 | 81.4 | 98.8 | 4.4:1 |
| 94.9 | 79.5 | 99.4 | 3.9:1 |
| 96.5 | 78.5 | 99.7 | 3.6:1 |
| 98.0 | 77.3 | 99.8 | 3.4:1 |
| 99.2 | 76.4 | 99.9 | 3.2:1 |
| 99.8 | 76.0 | 99.9 | 3.2:1 |
| 99.9 | 75.9 | 99.9 | 3.1:1 |
| 100.0 | 75.8 | 99.9 | 3.1:1 |

Imbonerahamwe
ku murongo ugaragaza kimwe cya kabiri gikennye
cyane cy'abantu bari
munsi y'100% ry'umurongo w'igihugu w'ubukene

Ishusho ya 4 (murongo ugaragaza kimwe cya kabiri gikennye cyane cy'abantu bari muni y'100% ry'umurongo w'igihugu w'ubukene): Urugero rwemejwe ubukene buriho ruhujwe n'ibyiciro

| Niba icyiciro cy'urugo ari . . . | . . . hanyuma urugero (%) rwo kuba muni y'umurongo w'ubukene |
|-------------------------------------|---|
| 0-4 | 98.2 |
| 5-9 | 75.6 |
| 10-14 | 69.7 |
| 15-19 | 56.3 |
| 20-24 | 38.6 |
| 25-29 | 28.3 |
| 30-34 | 18.2 |
| 35-39 | 12.6 |
| 40-44 | 6.5 |
| 45-49 | 3.4 |
| 50-54 | 2.0 |
| 55-59 | 0.5 |
| 60-64 | 0.0 |
| 65-69 | 0.0 |
| 70-74 | 0.0 |
| 75-79 | 0.0 |
| 80-84 | 0.0 |
| 85-89 | 0.0 |
| 90-94 | 0.0 |
| 95-100 | 0.0 |

Ishusho ya 6 (murongo ugaragaza kimwe cya kabiri gikennye cyane cy’abantu bari muni y’100% ry’umurongo w’igihugu w’ubukene): Kuri buri icyiciro, icyegeranyo cy’amatandukaniro hagati y’imiterere y’ubukene yemejwe n’imiterere y’ubukene nyayo kun go, hanwe n’imyitangirizwa y’icyizere, kuva kuri *bootstraps* 1,000 za $n = 16,384$, ikarita y’icyiciro ya 2010–2011 ikoreshejwe ku itsinda ry’o kwemeza

| Icyiciro | Ikigereranyo ukuyemo agaciro nyako | | | |
|----------|------------------------------------|--|-------------|-------------|
| | Ikinyuranyo | Ikigereranyo cyizewe (\pm ijanisha) | | |
| | | 90 ku ijana | 95 ku ijana | 99 ku ijana |
| 0–4 | +5.9 | 5.7 | 6.7 | 8.9 |
| 5–9 | +3.7 | 5.1 | 6.0 | 7.6 |
| 10–14 | +8.5 | 4.3 | 5.1 | 6.8 |
| 15–19 | +3.4 | 2.5 | 3.1 | 4.5 |
| 20–24 | +7.6 | 2.4 | 2.9 | 4.0 |
| 25–29 | +2.7 | 2.0 | 2.5 | 3.3 |
| 30–34 | –3.8 | 3.2 | 3.3 | 3.8 |
| 35–39 | –4.3 | 3.4 | 3.6 | 4.1 |
| 40–44 | –4.3 | 3.3 | 3.5 | 4.0 |
| 45–49 | +0.5 | 0.8 | 1.0 | 1.2 |
| 50–54 | +0.9 | 0.4 | 0.5 | 0.6 |
| 55–59 | +0.1 | 0.3 | 0.4 | 0.5 |
| 60–64 | 0.0 | 0.0 | 0.0 | 0.0 |
| 65–69 | –0.8 | 0.8 | 0.9 | 1.1 |
| 70–74 | 0.0 | 0.0 | 0.0 | 0.0 |
| 75–79 | 0.0 | 0.0 | 0.0 | 0.0 |
| 80–84 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85–89 | 0.0 | 0.0 | 0.0 | 0.0 |
| 90–94 | 0.0 | 0.0 | 0.0 | 0.0 |
| 95–100 | 0.0 | 0.0 | 0.0 | 0.0 |

Ishusho ya 7 (murongo ugaragaza kimwe cya kabiri gikennye cyane cy’abantu bari muni y’100% ry’umurongo w’igihugu w’ubukene): icyegeranyo cy’amatandukaniro hagati y’amajanja y’ubukene yemejwe n’imibare nyakuri ku itsinda mu gihe runaka, hamwe n’imyitangirizwa y’icyizere, kuri *bootstraps* 1,000 z’ingano z’amatsinda y’inyigo atandukanye, ikarita y’icyiciro ya 2010–2011 ikoreshejwe ku itsinda ryemeza

| Urugero ingano <i>n</i> | Ikigereranyo ukuyemo agaciro nyako | | | |
|-------------------------------|------------------------------------|--|-------------|-------------|
| | Ikinyuranyo | Ikigereranyo cyizewe (\pm ijanisha) | | |
| | | | 90 ku ijana | 95 ku ijana |
| 1 | +2.5 | 64.0 | 69.0 | 84.6 |
| 4 | +1.8 | 30.1 | 36.6 | 52.6 |
| 8 | +1.7 | 21.8 | 29.7 | 41.7 |
| 16 | +1.4 | 17.2 | 22.1 | 30.6 |
| 32 | +0.7 | 13.9 | 16.4 | 21.4 |
| 64 | +0.5 | 9.8 | 11.6 | 16.1 |
| 128 | +0.4 | 7.3 | 8.6 | 11.7 |
| 256 | +0.4 | 5.5 | 6.5 | 8.2 |
| 512 | +0.3 | 3.8 | 4.6 | 6.4 |
| 1,024 | +0.3 | 2.7 | 3.2 | 4.1 |
| 2,048 | +0.3 | 1.9 | 2.3 | 2.9 |
| 4,096 | +0.3 | 1.3 | 1.6 | 2.1 |
| 8,192 | +0.3 | 0.9 | 1.1 | 1.5 |
| 16,384 | +0.3 | 0.7 | 0.8 | 1.0 |

Ishusho ya 10 (murongo ugaragaza kimwe cya kabiri gikennye cyane cy'abantu bari muni y'100% ry'umurongo w'igihugu w'ubukene): Amajanisha y'ingo ku cyiciro cyo ku murongo wafatiweho no gushyira mu byiciro ku irasantego, hamwe n'ijanisha ryo hejuru, na BPAC, ikarita y'icyiciro ya 2010–2011 ku itsinda ry'inyigo ryo kwemeza

| Umubare ntarengwa | <u>Ibyashyizwemo:</u> | <u>Ibiri muni:</u> | <u>Ibyibeshyweho:</u> | <u>Ibyakuwemo:</u> | <u>Ikigero</u> | <u>BPAC</u> |
|----------------------|--|---|---|---|--|---------------------|
| | <Umurongo w'ubukene washyizwe mu irasantego nta kwibeshya | < Umurongo w'ubukene utarashyizwe mu irasantego habayeho kwibeshya | ≥ Umurongo w'ubukene washyizwe mu habayeho kwibeshya | ≥ Umurongo w'ubukene utarashyizwe mu irasantego nta kwibeshya | cy'ibyashobotse: Ibyashyizwemo + Ibyakuwemo | Reba ibyanditswe |
| ≤4 | 0.3 | 18.8 | 0.0 | 80.7 | 81.0 | -96.5 |
| ≤9 | 1.4 | 17.8 | 0.5 | 80.3 | 81.6 | -83.4 |
| ≤14 | 4.0 | 15.1 | 2.0 | 78.8 | 82.8 | -47.9 |
| ≤19 | 7.6 | 11.5 | 5.5 | 75.2 | 82.9 | +8.5 |
| ≤24 | 10.9 | 8.2 | 11.8 | 69.0 | 79.9 | +38.5 |
| ≤29 | 14.1 | 5.0 | 19.7 | 61.0 | 75.1 | -3.2 |
| ≤34 | 16.4 | 2.8 | 29.0 | 51.7 | 68.1 | -51.7 |
| ≤39 | 18.0 | 1.1 | 39.8 | 40.9 | 58.9 | -108.0 |
| ≤44 | 18.8 | 0.4 | 49.5 | 31.3 | 50.0 | -158.5 |
| ≤49 | 19.0 | 0.1 | 57.8 | 22.9 | 41.9 | -202.0 |
| ≤54 | 19.1 | 0.0 | 64.5 | 16.3 | 35.3 | -236.9 |
| ≤59 | 19.1 | 0.0 | 69.0 | 11.8 | 30.9 | -260.3 |
| ≤64 | 19.1 | 0.0 | 73.0 | 7.7 | 26.8 | -281.4 |
| ≤69 | 19.1 | 0.0 | 75.8 | 4.9 | 24.1 | -295.9 |
| ≤74 | 19.1 | 0.0 | 77.3 | 3.4 | 22.6 | -303.9 |
| ≤79 | 19.1 | 0.0 | 78.8 | 1.9 | 21.1 | -311.8 |
| ≤84 | 19.1 | 0.0 | 80.0 | 0.7 | 19.8 | -318.3 |
| ≤89 | 19.1 | 0.0 | 80.7 | 0.1 | 19.2 | -321.4 |
| ≤94 | 19.1 | 0.0 | 80.7 | 0.0 | 19.1 | -321.8 |
| ≤100 | 19.1 | 0.0 | 80.8 | -0.1 | 19.0 | -322.4 |

Ibyashyizwemo, ibiri muni, ibyibeshyweho, n'ibyakuwemo bigahuzwa kugira ngo bigere ku 100.

Ishusho ya 11 (murongo ugaragaza kimwe cya kabiri gikennye cyane cy'abantu bari muni y'100% ry'umurongo w'igihugu w'ubukene): Umugabane w'ingo zose zo mu irasantego (ni ukuvuga, icyiciro cyo ku murongo wafatiweho cyangwa mu nsi yawo), umugabane w'ingo zo mu irasantego zikennye (ni ukuvuga, zifite imibereho iri muni y'umurongo w'ubukene), umugabane w'ingo zikennye zashyizwe mu irasantego, n'umubare w'ingo zikennye zagize intsinzi mu irasantego (mo imbere) ku ngo zidakennye zashyizwe mu irasantego byo kwibeshya ku ikarita y'icyiciro ya 2010–2011 ikoreshejwe ku itsinda ry'inyigo yo kwemeza

| % ry'ingo zose zakoreweho ubushakashatsi | % ry'ingo zakoreweho ubushakashatsi zikennye | % ry'ingo zikennye zakoreweho ubushakashatsi | Ingo zikennye zakoreweho ubushakashatsi ugereranyije n'ingo zidakennye zakoreweho ubushakashatsi |
|--|--|--|--|
| 0.4 | 92.3 | 1.7 | 12.0:1 |
| 1.8 | 75.2 | 7.1 | 3.0:1 |
| 6.0 | 67.2 | 20.9 | 2.0:1 |
| 13.1 | 58.2 | 39.9 | 1.4:1 |
| 22.7 | 48.1 | 57.0 | 0.9:1 |
| 33.8 | 41.6 | 73.6 | 0.7:1 |
| 45.4 | 36.1 | 85.5 | 0.6:1 |
| 57.8 | 31.1 | 93.9 | 0.5:1 |
| 68.2 | 27.5 | 98.0 | 0.4:1 |
| 76.8 | 24.7 | 99.2 | 0.3:1 |
| 83.6 | 22.8 | 99.7 | 0.3:1 |
| 88.1 | 21.7 | 99.8 | 0.3:1 |
| 92.2 | 20.7 | 99.8 | 0.3:1 |
| 94.9 | 20.2 | 99.9 | 0.3:1 |
| 96.5 | 19.8 | 99.9 | 0.2:1 |
| 98.0 | 19.5 | 99.9 | 0.2:1 |
| 99.2 | 19.3 | 99.9 | 0.2:1 |
| 99.8 | 19.2 | 99.9 | 0.2:1 |
| 99.9 | 19.2 | 99.9 | 0.2:1 |
| 100.0 | 19.1 | 99.9 | 0.2:1 |

**Imbonerahamwe
ku idolari 1.25 ku munsu ku murongo
w'ubukene PPP 2005**

**Ishusho ya 4 (idolari 1.25 ku muni ku murongo w'ubukene PPP
2005): Urugero rwemejwe ubukene buriho ruhujwe
n'ibyiciro**

| Niba icyiciro cy'urugo ari . . . | . . . hanyuma urugero (%) rwo kuba muni y'umurongo w'ubukene |
|---|---|
| 0-4 | 100.0 |
| 5-9 | 97.5 |
| 10-14 | 96.7 |
| 15-19 | 94.3 |
| 20-24 | 88.2 |
| 25-29 | 85.1 |
| 30-34 | 76.6 |
| 35-39 | 60.4 |
| 40-44 | 50.8 |
| 45-49 | 36.4 |
| 50-54 | 21.2 |
| 55-59 | 17.4 |
| 60-64 | 7.7 |
| 65-69 | 3.4 |
| 70-74 | 1.8 |
| 75-79 | 0.2 |
| 80-84 | 0.2 |
| 85-89 | 0.2 |
| 90-94 | 0.0 |
| 95-100 | 0.0 |

Ishusho ya 6 (idolari 1.25 ku muni ku murongo w'ubukene PPP 2005): Kuri buri cyiciro, icyegeranyo cy'amatandukaniro hagati y'imiterere y'ubukene yemejwe n'imiterere y'ubukene nyayo kun go, hanwe n'imyitangirizwa y'icyizere, kuva kuri *bootstraps* 1,000 za $n = 16,384$, ikarita y'icyiciro ya 2010–2011 ikoreshejwe ku itsinda ryo kwemeza

| Icyiciro | Ikigereranyo ukuyemo agaciro nyako | | | |
|----------|------------------------------------|--|-------------|-------------|
| | Ikinyuranyo | Ikigereranyo cyizewe (\pm ijanisha) | | |
| | | 90 ku ijana | 95 ku ijana | 99 ku ijana |
| 0–4 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5–9 | –0.4 | 1.7 | 1.9 | 2.5 |
| 10–14 | –0.2 | 1.0 | 1.2 | 1.5 |
| 15–19 | +1.7 | 1.3 | 1.6 | 2.1 |
| 20–24 | +1.6 | 2.0 | 2.2 | 2.8 |
| 25–29 | +3.2 | 2.0 | 2.4 | 3.2 |
| 30–34 | +5.3 | 2.1 | 2.4 | 3.2 |
| 35–39 | –0.9 | 2.5 | 3.0 | 3.8 |
| 40–44 | +4.0 | 2.8 | 3.3 | 4.3 |
| 45–49 | –0.9 | 2.2 | 2.6 | 3.3 |
| 50–54 | –9.9 | 6.8 | 7.2 | 8.2 |
| 55–59 | +5.4 | 2.0 | 2.4 | 3.0 |
| 60–64 | +1.2 | 1.6 | 1.9 | 2.5 |
| 65–69 | –1.9 | 1.8 | 1.9 | 2.5 |
| 70–74 | –0.6 | 1.4 | 1.7 | 2.1 |
| 75–79 | –0.5 | 0.8 | 1.0 | 1.2 |
| 80–84 | +0.2 | 0.0 | 0.0 | 0.0 |
| 85–89 | +0.2 | 0.0 | 0.0 | 0.0 |
| 90–94 | 0.0 | 0.0 | 0.0 | 0.0 |
| 95–100 | 0.0 | 0.0 | 0.0 | 0.0 |

Ishusho ya 7 (idolari 1.25 ku muni ku murongo w'ubukene PPP 2005): icyegeranyo cy'amatandukaniro hagati y'amajanisha y'ubukene yemejwe n'imibare nyakuri ku itsinda mu gihe runaka, hamwe n'imyitangirizwa y'icyizere, kuri *bootstraps* 1,000 z'ingano z'amatsinda y'inyigo atandukanye, ikarita y'icyiciro ya 2010–2011 ikoreshejwe ku itsinda ryemeza

| Urugero ingano | Ikigereranyo ukuyemo agaciro nyako | | | |
|-------------------|------------------------------------|--|-------------|-------------|
| | Ikinyuranyo | Ikigereranyo cyizewe (\pm ijanisha) | | |
| <i>n</i> | | | 90 ku ijana | 95 ku ijana |
| 1 | +1.4 | 70.1 | 82.0 | 93.3 |
| 4 | +2.0 | 33.9 | 42.7 | 54.9 |
| 8 | +1.7 | 26.7 | 31.8 | 41.6 |
| 16 | +1.5 | 18.8 | 23.6 | 30.9 |
| 32 | +1.6 | 14.9 | 18.2 | 24.8 |
| 64 | +1.3 | 10.7 | 13.1 | 17.1 |
| 128 | +1.0 | 7.9 | 9.1 | 12.8 |
| 256 | +1.1 | 5.3 | 6.6 | 8.4 |
| 512 | +1.2 | 3.9 | 4.5 | 5.6 |
| 1,024 | +1.1 | 2.6 | 3.0 | 4.3 |
| 2,048 | +1.1 | 2.0 | 2.3 | 3.2 |
| 4,096 | +1.1 | 1.4 | 1.7 | 2.2 |
| 8,192 | +1.1 | 1.0 | 1.2 | 1.5 |
| 16,384 | +1.1 | 0.7 | 0.8 | 1.1 |

Ishusho ya 10 (idolari 1.25 ku munsu ku murongo w'ubukene PPP 2005): Amajanisha y'ingo ku cyiciro cyo ku murongo wafatiweho no gushyira mu byiciro ku irasantego, hamwe n'ijanisha ryo hejuru, na BPAC, ikarita y'icyiciro ya 2010–2011 ku itsinda ry'inyigo ryo kwemeza

| Umubare ntarengwa | <u>Ibyashyizwemo:</u> | <u>Ibiri munsu:</u> | <u>Ibyibeshyweho:</u> | <u>Ibyakuwemo:</u> | <u>Ikigero</u> | <u>BPAC</u> |
|----------------------|--|---|---|---|--|---------------------|
| | <Umurongo w'ubukene washyizwe mu irasantego nta kwibeshya | < Umurongo w'ubukene utarashyizwe mu irasantego habayeho kwibeshya | ≥ Umurongo w'ubukene washyizwe mu habayeho kwibeshya | ≥ Umurongo w'ubukene utarashyizwe mu irasantego nta kwibeshya | cy'ibyashobotse: Ibyashyizwemo + Ibyakuwemo | Reba ibyanditswe |
| ≤4 | 0.4 | 56.9 | 0.0 | 42.6 | 43.0 | -98.8 |
| ≤9 | 1.8 | 55.5 | 0.0 | 42.6 | 44.4 | -93.7 |
| ≤14 | 5.8 | 51.5 | 0.2 | 42.4 | 48.2 | -79.5 |
| ≤19 | 12.3 | 44.9 | 0.8 | 41.8 | 54.2 | -55.5 |
| ≤24 | 20.7 | 36.6 | 2.0 | 40.6 | 61.3 | -24.2 |
| ≤29 | 29.9 | 27.4 | 3.9 | 38.7 | 68.6 | +11.3 |
| ≤34 | 38.3 | 19.0 | 7.2 | 35.5 | 73.7 | +46.1 |
| ≤39 | 46.0 | 11.2 | 11.8 | 30.9 | 76.9 | +79.5 |
| ≤44 | 51.0 | 6.2 | 17.2 | 25.4 | 76.4 | +70.0 |
| ≤49 | 54.3 | 3.0 | 22.6 | 20.0 | 74.3 | +60.6 |
| ≤54 | 56.1 | 1.2 | 27.5 | 15.1 | 71.2 | +51.9 |
| ≤59 | 56.7 | 0.6 | 31.4 | 11.2 | 67.9 | +45.1 |
| ≤64 | 57.0 | 0.2 | 35.1 | 7.5 | 64.5 | +38.7 |
| ≤69 | 57.2 | 0.1 | 37.7 | 4.9 | 62.1 | +34.1 |
| ≤74 | 57.3 | 0.0 | 39.2 | 3.4 | 60.7 | +31.6 |
| ≤79 | 57.3 | 0.0 | 40.7 | 1.9 | 59.2 | +28.9 |
| ≤84 | 57.3 | 0.0 | 41.9 | 0.7 | 57.9 | +26.8 |
| ≤89 | 57.3 | 0.0 | 42.5 | 0.1 | 57.3 | +25.7 |
| ≤94 | 57.3 | 0.0 | 42.6 | 0.0 | 57.3 | +25.6 |
| ≤100 | 57.3 | 0.0 | 42.7 | -0.1 | 57.2 | +25.4 |

Ibyashyizwemo, ibiri munsu, ibyibeshyweho, n'ibyakuwemo bigahuzwa kugira ngo bigere ku 100.

Ishusho ya 11 (idolari 1.25 ku muni ku murongo w'ubukene PPP 2005): Umugabane w'ingo zose zo mu irasantego (ni ukuvuga, icyiciro cyo ku murongo wafatiweho cyangwa mu nsi yawo), umugabane w'ingo zo mu irasantego zikennye (ni ukuvuga, zifite imibereho iri muni y'umurongo w'ubukene), umugabane w'ingo zikennye zashyizwe mu irasantego, n'umubare w'ingo zikennye zagize intsinzi mu irasantego (mo imbere) ku ngo zidakennye zashyizwe mu irasantego byo kwibeshya ku ikarita y'icyiciro ya 2010–2011 ikoreshejwe ku itsinda ry'inyigo yo kwemeza

| % ry'ingo zose zakoreweho ubushakashatsi | % ry'ingo zakoreweho ubushakashatsi zikennye | % ry'ingo zikennye zakoreweho ubushakashatsi | Ingo zikennye zakoreweho ubushakashatsi ugereranyije n'ingo zidakennye zakoreweho ubushakashatsi |
|---|---|---|---|
| 0.4 | 100.0 | 0.6 | Izikennye gusa ni zo zakoreweho ubushakashatsi |
| 1.8 | 98.4 | 3.1 | 61.7:1 |
| 6.0 | 96.6 | 10.1 | 28.7:1 |
| 13.1 | 94.0 | 21.5 | 15.8:1 |
| 22.7 | 91.1 | 36.1 | 10.2:1 |
| 33.8 | 88.4 | 52.2 | 7.6:1 |
| 45.4 | 84.2 | 66.7 | 5.3:1 |
| 57.8 | 79.6 | 80.3 | 3.9:1 |
| 68.2 | 74.8 | 89.0 | 3.0:1 |
| 76.8 | 70.6 | 94.6 | 2.4:1 |
| 83.6 | 67.1 | 97.8 | 2.0:1 |
| 88.1 | 64.3 | 98.9 | 1.8:1 |
| 92.2 | 61.9 | 99.5 | 1.6:1 |
| 94.9 | 60.3 | 99.8 | 1.5:1 |
| 96.5 | 59.4 | 99.9 | 1.5:1 |
| 98.0 | 58.5 | 99.9 | 1.4:1 |
| 99.2 | 57.7 | 99.9 | 1.4:1 |
| 99.8 | 57.4 | 99.9 | 1.3:1 |
| 99.9 | 57.3 | 99.9 | 1.3:1 |
| 100.0 | 57.3 | 99.9 | 1.3:1 |

**Imbonerahamwe
ku idolari 2.00 ku munsu ku murongo
w'ubukene PPP 2005**

**Ishusho ya 4 (idolari 2.00 ku muni ku murongo w'ubukene PPP
2005): Urugero rwemejwe ubukene buriho ruhujwe
n'ibyiciro**

| Niba icyiciro cy'urugo ari . . . | . . . hanyuma urugero (%) rwo kuba muni y'umurongo w'ubukene |
|---|---|
| 0-4 | 100.0 |
| 5-9 | 99.2 |
| 10-14 | 99.1 |
| 15-19 | 98.6 |
| 20-24 | 97.4 |
| 25-29 | 96.9 |
| 30-34 | 95.9 |
| 35-39 | 90.6 |
| 40-44 | 83.3 |
| 45-49 | 73.2 |
| 50-54 | 61.5 |
| 55-59 | 46.6 |
| 60-64 | 31.1 |
| 65-69 | 17.7 |
| 70-74 | 10.1 |
| 75-79 | 8.2 |
| 80-84 | 2.1 |
| 85-89 | 0.6 |
| 90-94 | 0.0 |
| 95-100 | 0.0 |

Ishusho ya 6 (idolari 2.00 ku muni ku murongo w'ubukene PPP 2005): Kuri buri cyiciro, icyegeranyo cy'amatandukaniro hagati y'imiterere y'ubukene yemejwe n'imiterere y'ubukene nyayo kun go, hanwe n'imyitangirizwa y'icyizere, kuva kuri *bootstraps* 1,000 za $n = 16,384$, ikarita y'icyiciro ya 2010–2011 ikoreshejwe ku itsinda ryo kwemeza

| Icyiciro | Ikigereranyo ukuyemo agaciro nyako | | | |
|----------|------------------------------------|--|-------------|-------------|
| | Ikinyuranyo | Ikigereranyo cyizewe (\pm ijanisha) | | |
| | | 90 ku ijana | 95 ku ijana | 99 ku ijana |
| 0–4 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5–9 | –0.8 | 0.4 | 0.4 | 0.4 |
| 10–14 | –0.3 | 0.4 | 0.5 | 0.6 |
| 15–19 | –0.5 | 0.4 | 0.5 | 0.7 |
| 20–24 | –0.4 | 0.6 | 0.7 | 0.9 |
| 25–29 | –0.8 | 0.7 | 0.7 | 0.8 |
| 30–34 | +2.9 | 1.1 | 1.3 | 1.7 |
| 35–39 | +4.1 | 2.3 | 2.9 | 4.0 |
| 40–44 | +4.3 | 2.3 | 2.8 | 3.7 |
| 45–49 | +3.5 | 2.2 | 2.6 | 3.4 |
| 50–54 | –2.4 | 3.0 | 3.4 | 4.6 |
| 55–59 | +8.9 | 3.3 | 3.9 | 5.2 |
| 60–64 | +7.6 | 3.0 | 3.7 | 4.7 |
| 65–69 | +4.9 | 2.5 | 2.9 | 3.6 |
| 70–74 | –5.9 | 5.1 | 5.5 | 6.3 |
| 75–79 | +2.2 | 2.5 | 3.0 | 3.7 |
| 80–84 | –0.9 | 2.1 | 2.4 | 3.2 |
| 85–89 | –0.7 | 1.6 | 1.7 | 2.0 |
| 90–94 | 0.0 | 0.0 | 0.0 | 0.0 |
| 95–100 | 0.0 | 0.0 | 0.0 | 0.0 |

Ishusho ya 7 (idolari 2.00 ku muni ku murongo w'ubukene PPP 2005): icyegeranyo cy'amatandukaniro hagati y'amajanja y'ubukene yemejwe n'imibare nyakuri ku itsinda mu gihe runaka, hamwe n'imyitangirizwa y'icyizere, kuri *bootstraps* 1,000 z'ingano z'amatsinda y'inyigo atandukanye, ikarita y'icyiciro ya 2010–2011 ikoreshejwe ku itsinda ryemeza

| Urugero ingano | Ikigereranyo ukuyemo agaciro nyako | | | |
|-------------------|------------------------------------|--|-------------|-------------|
| | Ikinyuranyo | Ikigereranyo cyizewe (\pm ijanisha) | | |
| <i>n</i> | | | 90 ku ijana | 95 ku ijana |
| 1 | +2.2 | 60.9 | 72.0 | 86.2 |
| 4 | +2.1 | 30.8 | 36.4 | 47.4 |
| 8 | +2.2 | 21.6 | 28.2 | 36.9 |
| 16 | +2.0 | 17.0 | 19.8 | 24.7 |
| 32 | +2.2 | 12.0 | 14.6 | 19.6 |
| 64 | +2.2 | 9.1 | 10.6 | 13.5 |
| 128 | +2.0 | 6.2 | 7.2 | 9.6 |
| 256 | +2.0 | 4.3 | 5.1 | 6.7 |
| 512 | +2.1 | 3.0 | 3.6 | 5.0 |
| 1,024 | +2.1 | 2.1 | 2.6 | 3.4 |
| 2,048 | +2.1 | 1.6 | 1.9 | 2.4 |
| 4,096 | +2.0 | 1.1 | 1.3 | 1.6 |
| 8,192 | +2.0 | 0.8 | 1.0 | 1.2 |
| 16,384 | +2.0 | 0.6 | 0.7 | 0.9 |

Ishusho ya 10 (idolari 2.00 ku munsu ku murongo w'ubukene PPP 2005): Amajanisha y'ingo ku cyiciro cyo ku murongo wafatiweho no gushyira mu byiciro ku irasantego, hamwe n'ijanisha ryo hejuru, na BPAC, ikarita y'icyiciro ya 2010–2011 ku itsinda ry'inyigo ryo kwemeza

| Umubare ntarengwa | <u>Ibyashyizwemo:</u> | <u>Ibiri munsu:</u> | <u>Ibyibeshyweho:</u> | <u>Ibyakuwemo:</u> | <u>Ikigero</u> | <u>BPAC</u> |
|----------------------|--|---|---|---|--|---------------------|
| | <Umurongo w'ubukene washyizwe mu irasantego nta kwibeshya | < Umurongo w'ubukene utarashyizwe mu irasantego habayeho kwibeshya | ≥ Umurongo w'ubukene washyizwe mu habayeho kwibeshya | ≥ Umurongo w'ubukene utarashyizwe mu irasantego nta kwibeshya | cy'ibyashobotse: Ibyashyizwemo + Ibyakuwemo | Reba ibyanditswe |
| ≤4 | 0.4 | 77.5 | 0.0 | 22.0 | 22.4 | -99.1 |
| ≤9 | 1.8 | 76.1 | 0.0 | 22.0 | 23.8 | -95.3 |
| ≤14 | 5.9 | 72.0 | 0.0 | 22.0 | 27.9 | -84.7 |
| ≤19 | 13.0 | 64.9 | 0.1 | 21.9 | 34.9 | -66.4 |
| ≤24 | 22.3 | 55.6 | 0.4 | 21.6 | 43.9 | -42.2 |
| ≤29 | 33.1 | 44.8 | 0.7 | 21.3 | 54.4 | -14.0 |
| ≤34 | 43.9 | 34.0 | 1.5 | 20.5 | 64.4 | +14.7 |
| ≤39 | 55.2 | 22.7 | 2.6 | 19.4 | 74.5 | +45.0 |
| ≤44 | 63.6 | 14.3 | 4.7 | 17.3 | 80.9 | +69.3 |
| ≤49 | 69.7 | 8.1 | 7.1 | 14.9 | 84.7 | +88.2 |
| ≤54 | 74.0 | 3.9 | 9.6 | 12.4 | 86.4 | +87.7 |
| ≤59 | 75.9 | 2.0 | 12.2 | 9.8 | 85.6 | +84.3 |
| ≤64 | 77.0 | 0.9 | 15.1 | 6.9 | 83.9 | +80.6 |
| ≤69 | 77.5 | 0.4 | 17.5 | 4.5 | 82.0 | +77.6 |
| ≤74 | 77.7 | 0.1 | 18.7 | 3.3 | 81.0 | +76.0 |
| ≤79 | 77.8 | 0.0 | 20.1 | 1.9 | 79.7 | +74.2 |
| ≤84 | 77.9 | 0.0 | 21.3 | 0.7 | 78.5 | +72.6 |
| ≤89 | 77.9 | 0.0 | 21.9 | 0.1 | 78.0 | +71.8 |
| ≤94 | 77.9 | 0.0 | 22.0 | 0.0 | 77.9 | +71.8 |
| ≤100 | 77.9 | 0.0 | 22.1 | -0.1 | 77.8 | +71.6 |

Ibyashyizwemo, ibiri munsu, ibyibeshyweho, n'ibyakuwemo bigahuzwa kugira ngo bigere ku 100.

Ishusho ya 11 (idolari 2.00 ku muni ku murongo w'ubukene PPP 2005): Umugabane w'ingo zose zo mu irasantego (ni ukuvuga, icyiciro cyo ku murongo wafatiweho cyangwa mu nsi yawo), umugabane w'ingo zo mu irasantego zikennye (ni ukuvuga, zifite imibereho iri muni y'umurongo w'ubukene), umugabane w'ingo zikennye zashyizwe mu irasantego, n'umubare w'ingo zikennye zagize intsinzi mu irasantego (mo imbere) ku ngo zidakennye zashyizwe mu irasantego byo kwibeshya ku ikarita y'icyiciro ya 2010–2011 ikoreshejwe ku itsinda ry'inyigo yo kwemeza

| % ry'ingo zose zakoreweho ubushakashatsi | % ry'ingo zakoreweho ubushakashatsi zikennye | % ry'ingo zikennye zakoreweho ubushakashatsi | Ingo zikennye zakoreweho ubushakashatsi ugereranyije n'ingo zidakennye zakoreweho ubushakashatsi |
|---|---|---|---|
| 0.4 | 100.0 | 0.4 | Izikennye gusa ni zo zakoreweho ubushakashatsi |
| 1.8 | 100.0 | 2.3 | Izikennye gusa ni zo zakoreweho ubushakashatsi |
| 6.0 | 99.4 | 7.6 | 158.7:1 |
| 13.1 | 99.1 | 16.7 | 115.5:1 |
| 22.7 | 98.3 | 28.6 | 58.6:1 |
| 33.8 | 97.8 | 42.5 | 45.1:1 |
| 45.4 | 96.7 | 56.3 | 29.1:1 |
| 57.8 | 95.4 | 70.7 | 20.9:1 |
| 68.2 | 93.2 | 81.5 | 13.6:1 |
| 76.8 | 90.8 | 89.4 | 9.9:1 |
| 83.6 | 88.5 | 94.9 | 7.7:1 |
| 88.1 | 86.1 | 97.3 | 6.2:1 |
| 92.2 | 83.6 | 98.8 | 5.1:1 |
| 94.9 | 81.6 | 99.4 | 4.4:1 |
| 96.5 | 80.6 | 99.7 | 4.2:1 |
| 98.0 | 79.4 | 99.8 | 3.9:1 |
| 99.2 | 78.5 | 99.9 | 3.6:1 |
| 99.8 | 78.0 | 99.9 | 3.6:1 |
| 99.9 | 78.0 | 99.9 | 3.5:1 |
| 100.0 | 77.9 | 99.9 | 3.5:1 |

**Imbonerahamwe
ku idolari 2.50 ku munsu ku murongo
w'ubukene PPP 2005**

**Ishusho ya 4 (idolari 2.50 ku muni ku murongo w'ubukene PPP
2005): Urugero rwemejwe ubukene buriho ruhujwe
n'ibyiciro**

| Niba icyiciro cy'urugo ari . . . | . . . hanyuma urugero (%) rwo kuba muni y'umurongo w'ubukene |
|---|---|
| 0-4 | 100.0 |
| 5-9 | 99.8 |
| 10-14 | 99.7 |
| 15-19 | 99.6 |
| 20-24 | 99.1 |
| 25-29 | 98.7 |
| 30-34 | 98.3 |
| 35-39 | 95.7 |
| 40-44 | 91.2 |
| 45-49 | 85.2 |
| 50-54 | 77.2 |
| 55-59 | 61.0 |
| 60-64 | 44.4 |
| 65-69 | 28.0 |
| 70-74 | 18.2 |
| 75-79 | 14.8 |
| 80-84 | 8.7 |
| 85-89 | 2.4 |
| 90-94 | 0.0 |
| 95-100 | 0.0 |

Ishusho ya 6 (idolari 2.50 ku munsu ku murongo w'ubukene PPP 2005): Kuri buri cyiciro, icyegeranyo cy'amatandukaniro hagati y'imiterere y'ubukene yemejwe n'imiterere y'ubukene nyayo kun go, hanwe n'imyitangirizwa y'icyizere, kuva kuri *bootstraps* 1,000 za $n = 16,384$, ikarita y'icyiciro ya 2010–2011 ikoreshejwe ku itsinda ryo kwemeza

| Icyiciro | Ikigereranyo ukuyemo agaciro nyako | | | |
|----------|------------------------------------|--|-------------|-------------|
| | Ikinyuranyo | Ikigereranyo cyizewe (\pm ijanisha) | | |
| | | 90 ku ijana | 95 ku ijana | 99 ku ijana |
| 0–4 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5–9 | –0.2 | 0.1 | 0.1 | 0.1 |
| 10–14 | +0.1 | 0.4 | 0.4 | 0.5 |
| 15–19 | +0.5 | 0.4 | 0.5 | 0.7 |
| 20–24 | +0.1 | 0.4 | 0.5 | 0.6 |
| 25–29 | –0.2 | 0.4 | 0.4 | 0.6 |
| 30–34 | +0.2 | 0.5 | 0.6 | 0.7 |
| 35–39 | +4.9 | 2.4 | 2.9 | 3.7 |
| 40–44 | +4.6 | 2.1 | 2.6 | 3.4 |
| 45–49 | +3.9 | 2.1 | 2.5 | 3.2 |
| 50–54 | –2.6 | 2.5 | 2.8 | 3.6 |
| 55–59 | +6.2 | 3.7 | 4.4 | 5.8 |
| 60–64 | +1.7 | 4.0 | 4.7 | 6.1 |
| 65–69 | +6.9 | 3.1 | 3.8 | 5.1 |
| 70–74 | –7.6 | 6.4 | 6.9 | 7.8 |
| 75–79 | +2.6 | 3.5 | 4.2 | 5.7 |
| 80–84 | +4.2 | 2.5 | 2.9 | 3.5 |
| 85–89 | –1.8 | 2.9 | 3.2 | 4.3 |
| 90–94 | 0.0 | 0.0 | 0.0 | 0.0 |
| 95–100 | 0.0 | 0.0 | 0.0 | 0.0 |

Ishusho ya 7 (idolari 2.50 ku muni ku murongo w'ubukene PPP 2005): icyegeranyo cy'amatandukaniro hagati y'amajanja y'ubukene yemejwe n'imibare nyakuri ku itsinda mu gihe runaka, hamwe n'imyitangirizwa y'icyizere, kuri *bootstraps* 1,000 z'ingano z'amatsinda y'inyigo atandukanye, ikarita y'icyiciro ya 2010–2011 ikoreshejwe ku itsinda ryemeza

| Urugero ingano | Ikigereranyo ukuyemo agaciro nyako | | | |
|-------------------|------------------------------------|--|-------------|-------------|
| | Ikinyuranyo | Ikigereranyo cyizewe (\pm ijanisha) | | |
| <i>n</i> | | | 90 ku ijana | 95 ku ijana |
| 1 | +0.6 | 50.0 | 70.4 | 90.0 |
| 4 | +1.3 | 26.8 | 34.0 | 50.5 |
| 8 | +1.5 | 19.3 | 25.8 | 39.9 |
| 16 | +1.6 | 15.8 | 19.6 | 25.2 |
| 32 | +1.8 | 11.7 | 14.6 | 18.8 |
| 64 | +2.0 | 8.3 | 9.9 | 13.3 |
| 128 | +1.8 | 5.7 | 7.1 | 9.2 |
| 256 | +1.8 | 4.2 | 4.9 | 6.5 |
| 512 | +1.8 | 2.8 | 3.5 | 4.8 |
| 1,024 | +1.8 | 1.9 | 2.4 | 3.4 |
| 2,048 | +1.8 | 1.4 | 1.7 | 2.4 |
| 4,096 | +1.8 | 1.0 | 1.2 | 1.6 |
| 8,192 | +1.8 | 0.7 | 0.9 | 1.2 |
| 16,384 | +1.8 | 0.5 | 0.7 | 0.8 |

Ishusho ya 10 (idolari 2.50 ku munsu ku murongo w'ubukene PPP 2005): Amajanisha y'ingo ku cyiciro cyo ku murongo wafatiweho no gushyira mu byiciro ku irasantego, hamwe n'ijanisha ryo hejuru, na BPAC, ikarita y'icyiciro ya 2010–2011 ku itsinda ry'inyigo ryo kwemeza

| Umubare ntarengwa | <u>Ibyashyizwemo:</u> | <u>Ibiri munsu:</u> | <u>Ibyibeshyweho:</u> | <u>Ibyakuwemo:</u> | <u>Ikigero</u> | <u>BPAC</u> |
|----------------------|--|---|---|---|--|---------------------|
| | <Umurongo w'ubukene washyizwe mu irasantego nta kwibeshya | < Umurongo w'ubukene utarashyizwe mu irasantego habayeho kwibeshya | ≥ Umurongo w'ubukene washyizwe mu habayeho kwibeshya | ≥ Umurongo w'ubukene utarashyizwe mu irasantego nta kwibeshya | cy'ibyashobotse: Ibyashyizwemo + Ibyakuwemo | Reba ibyanditswe |
| ≤4 | 0.4 | 84.0 | 0.0 | 15.5 | 15.9 | -99.2 |
| ≤9 | 1.8 | 82.6 | 0.0 | 15.5 | 17.3 | -95.7 |
| ≤14 | 5.9 | 78.4 | 0.0 | 15.5 | 21.4 | -85.9 |
| ≤19 | 13.0 | 71.4 | 0.1 | 15.4 | 28.4 | -69.0 |
| ≤24 | 22.5 | 61.9 | 0.2 | 15.3 | 37.8 | -46.4 |
| ≤29 | 33.4 | 50.9 | 0.4 | 15.1 | 48.6 | -20.2 |
| ≤34 | 44.8 | 39.6 | 0.7 | 14.8 | 59.6 | +6.9 |
| ≤39 | 56.6 | 27.8 | 1.2 | 14.3 | 70.9 | +35.6 |
| ≤44 | 66.0 | 18.4 | 2.2 | 13.3 | 79.3 | +59.1 |
| ≤49 | 73.2 | 11.2 | 3.6 | 11.9 | 85.1 | +77.8 |
| ≤54 | 78.5 | 5.9 | 5.1 | 10.4 | 89.0 | +92.1 |
| ≤59 | 81.2 | 3.2 | 6.9 | 8.6 | 89.8 | +91.8 |
| ≤64 | 82.9 | 1.4 | 9.2 | 6.3 | 89.2 | +89.1 |
| ≤69 | 83.7 | 0.7 | 11.3 | 4.3 | 88.0 | +86.7 |
| ≤74 | 84.1 | 0.3 | 12.4 | 3.1 | 87.3 | +85.4 |
| ≤79 | 84.3 | 0.1 | 13.7 | 1.8 | 86.1 | +83.8 |
| ≤84 | 84.3 | 0.0 | 14.9 | 0.6 | 85.0 | +82.4 |
| ≤89 | 84.4 | 0.0 | 15.4 | 0.1 | 84.5 | +81.7 |
| ≤94 | 84.4 | 0.0 | 15.5 | 0.0 | 84.4 | +81.6 |
| ≤100 | 84.4 | 0.0 | 15.6 | -0.1 | 84.3 | +81.5 |

Ibyashyizwemo, ibiri munsu, ibyibeshyweho, n'ibyakuwemo bigahuzwa kugira ngo bigere ku 100.

Ishusho ya 11 (idolari 2.50 ku muni ku murongo w'ubukene PPP 2005): Umugabane w'ingo zose zo mu irasantego (ni ukuvuga, icyiciro cyo ku murongo wafatiweho cyangwa mu nsi yawo), umugabane w'ingo zo mu irasantego zikennye (ni ukuvuga, zifite imibereho iri muni y'umurongo w'ubukene), umugabane w'ingo zikennye zashyizwe mu irasantego, n'umubare w'ingo zikennye zagize intsinzi mu irasantego (mo imbere) ku ngo zidakennye zashyizwe mu irasantego byo kwibeshya ku ikarita y'icyiciro ya 2010–2011 ikoreshejwe ku itsinda ry'inyigo yo kwemeza

| % ry'ingo zose zakoreweho ubushakashatsi | % ry'ingo zakoreweho ubushakashatsi zikennye | % ry'ingo zikennye zakoreweho ubushakashatsi | Ingo zikennye zakoreweho ubushakashatsi ugereranyije n'ingo zidakennye zakoreweho ubushakashatsi |
|---|---|---|---|
| 0.4 | 100.0 | 0.4 | Izikennye gusa ni zo zakoreweho ubushakashatsi |
| 1.8 | 100.0 | 2.1 | Izikennye gusa ni zo zakoreweho ubushakashatsi |
| 6.0 | 99.6 | 7.0 | 241.2:1 |
| 13.1 | 99.2 | 15.4 | 130.4:1 |
| 22.7 | 99.0 | 26.6 | 100.3:1 |
| 33.8 | 98.8 | 39.6 | 83.2:1 |
| 45.4 | 98.5 | 53.0 | 67.3:1 |
| 57.8 | 97.9 | 67.0 | 47.3:1 |
| 68.2 | 96.7 | 78.2 | 29.8:1 |
| 76.8 | 95.3 | 86.7 | 20.3:1 |
| 83.6 | 93.9 | 93.0 | 15.5:1 |
| 88.1 | 92.1 | 96.1 | 11.7:1 |
| 92.2 | 90.0 | 98.2 | 9.0:1 |
| 94.9 | 88.2 | 99.1 | 7.4:1 |
| 96.5 | 87.2 | 99.6 | 6.8:1 |
| 98.0 | 86.0 | 99.8 | 6.2:1 |
| 99.2 | 85.0 | 99.9 | 5.7:1 |
| 99.8 | 84.5 | 99.9 | 5.5:1 |
| 99.9 | 84.5 | 99.9 | 5.4:1 |
| 100.0 | 84.4 | 99.9 | 5.4:1 |

**Imbonerahamwe
ku idolari 5.00 ku munsu ku murongo
w'ubukene PPP 2005**

**Ishusho ya 4 (idolari 5.00 ku muni ku murongo w'ubukene PPP
2005): Urugero rwemejwe ubukene buriho ruhujwe
n'ibyiciro**

| Niba icyiciro cy'urugo ari . . . | . . . hanyuma urugero (%) rwo kuba muni y'umurongo w'ubukene |
|---|---|
| 0-4 | 100.0 |
| 5-9 | 100.0 |
| 10-14 | 100.0 |
| 15-19 | 100.0 |
| 20-24 | 100.0 |
| 25-29 | 99.9 |
| 30-34 | 99.9 |
| 35-39 | 99.9 |
| 40-44 | 99.5 |
| 45-49 | 98.5 |
| 50-54 | 95.7 |
| 55-59 | 90.4 |
| 60-64 | 80.2 |
| 65-69 | 69.4 |
| 70-74 | 55.6 |
| 75-79 | 50.8 |
| 80-84 | 28.2 |
| 85-89 | 16.8 |
| 90-94 | 10.9 |
| 95-100 | 0.0 |

Ishusho ya 6 (idolari 5.00 ku muni ku murongo w'ubukene PPP 2005): Kuri buri cyiciro, icyegeranyo cy'amatandukaniro hagati y'imiterere y'ubukene yemejwe n'imiterere y'ubukene nyayo kun go, hanwe n'imyitangirizwa y'icyizere, kuva kuri *bootstraps* 1,000 za $n = 16,384$, ikarita y'icyiciro ya 2010–2011 ikoreshejwe ku itsinda ryo kwemeza

| Icyiciro | Ikigereranyo ukuyemo agaciro nyako | | | |
|----------|------------------------------------|--|-------------|-------------|
| | Ikinyuranyo | Ikigereranyo cyizewe (\pm ijanisha) | | |
| | | 90 ku ijana | 95 ku ijana | 99 ku ijana |
| 0–4 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5–9 | 0.0 | 0.0 | 0.0 | 0.0 |
| 10–14 | 0.0 | 0.0 | 0.0 | 0.0 |
| 15–19 | 0.0 | 0.0 | 0.0 | 0.0 |
| 20–24 | 0.0 | 0.0 | 0.0 | 0.0 |
| 25–29 | +0.1 | 0.1 | 0.1 | 0.2 |
| 30–34 | 0.0 | 0.1 | 0.1 | 0.2 |
| 35–39 | +0.2 | 0.2 | 0.2 | 0.3 |
| 40–44 | +0.1 | 0.3 | 0.3 | 0.4 |
| 45–49 | –0.4 | 0.5 | 0.6 | 0.7 |
| 50–54 | –0.6 | 1.1 | 1.2 | 1.6 |
| 55–59 | +6.6 | 3.6 | 4.2 | 5.8 |
| 60–64 | +8.1 | 3.8 | 4.3 | 5.8 |
| 65–69 | +8.9 | 4.8 | 5.8 | 7.5 |
| 70–74 | +1.2 | 5.5 | 6.7 | 8.5 |
| 75–79 | +17.1 | 5.0 | 6.1 | 7.5 |
| 80–84 | +0.7 | 6.1 | 7.0 | 9.2 |
| 85–89 | –21.1 | 15.1 | 15.8 | 18.1 |
| 90–94 | –11.0 | 22.5 | 25.3 | 31.7 |
| 95–100 | –31.3 | 26.0 | 28.5 | 31.3 |

Ishusho ya 7 (idolari 5.00 ku muni ku murongo w'ubukene PPP 2005): icyegeranyo cy'amatandukaniro hagati y'amajanja y'ubukene yemejwe n'imibare nyakuri ku itsinda mu gihe runaka, hamwe n'imyitangirizwa y'icyizere, kuri *bootstraps* 1,000 z'ingano z'amatsinda y'inyigo atandukanye, ikarita y'icyiciro ya 2010–2011 ikoreshejwe ku itsinda ryemeza

| Urugero ingano | Ikigereranyo ukuyemo agaciro nyako | | | |
|-------------------|------------------------------------|--------------------------------------|-------------|-------------|
| | Ikinyuranyo | Ikigereranyo cyizewe (\pm ijanja) | | |
| <i>n</i> | | | 90 ku ijana | 95 ku ijana |
| 1 | +0.8 | 24.0 | 55.4 | 85.1 |
| 4 | +0.7 | 17.6 | 22.9 | 38.5 |
| 8 | +0.7 | 12.8 | 16.7 | 25.2 |
| 16 | +0.9 | 9.2 | 12.7 | 18.1 |
| 32 | +0.9 | 7.5 | 9.4 | 12.0 |
| 64 | +1.0 | 5.3 | 6.5 | 9.0 |
| 128 | +1.0 | 3.9 | 4.7 | 6.2 |
| 256 | +1.0 | 2.8 | 3.3 | 4.3 |
| 512 | +0.9 | 2.0 | 2.4 | 3.0 |
| 1,024 | +1.0 | 1.4 | 1.6 | 2.2 |
| 2,048 | +1.0 | 1.0 | 1.2 | 1.6 |
| 4,096 | +1.0 | 0.7 | 0.8 | 1.0 |
| 8,192 | +1.0 | 0.5 | 0.6 | 0.7 |
| 16,384 | +1.0 | 0.3 | 0.4 | 0.5 |

Ishusho ya 10 (idolari 5.00 ku munsu ku murongo w'ubukene PPP 2005): Amajanisha y'ingo ku cyiciro cyo ku murongo wafatiweho no gushyira mu byiciro ku irasantego, hamwe n'ijanisha ryo hejuru, na BPAC, ikarita y'icyiciro ya 2010–2011 ku itsinda ry'inyigo ryo kwemeza

| Umubare ntarengwa | <u>Ibyashyizwemo:</u> | <u>Ibiri munsu:</u> | <u>Ibyibeshyweho:</u> | <u>Ibyakuwemo:</u> | <u>Ikigero</u> | <u>BPAC</u> |
|----------------------|--|---|---|---|--|---------------------|
| | <Umurongo w'ubukene washyizwe mu irasantego nta kwibeshya | < Umurongo w'ubukene utarashyizwe mu irasantego habayeho kwibeshya | ≥ Umurongo w'ubukene washyizwe mu habayeho kwibeshya | ≥ Umurongo w'ubukene utarashyizwe mu irasantego nta kwibeshya | cy'ibyashobotse: Ibyashyizwemo + Ibyakuwemo | Reba ibyanditswe |
| ≤4 | 0.4 | 93.7 | 0.0 | 5.9 | 6.2 | -99.3 |
| ≤9 | 1.8 | 92.2 | 0.0 | 5.9 | 7.7 | -96.1 |
| ≤14 | 6.0 | 88.0 | 0.0 | 5.9 | 11.8 | -87.3 |
| ≤19 | 13.1 | 80.9 | 0.0 | 5.9 | 19.0 | -72.1 |
| ≤24 | 22.7 | 71.3 | 0.0 | 5.9 | 28.6 | -51.7 |
| ≤29 | 33.8 | 60.2 | 0.0 | 5.9 | 39.7 | -28.0 |
| ≤34 | 45.4 | 48.6 | 0.0 | 5.8 | 51.2 | -3.4 |
| ≤39 | 57.7 | 36.3 | 0.1 | 5.8 | 63.5 | +22.9 |
| ≤44 | 68.1 | 25.9 | 0.2 | 5.7 | 73.8 | +45.0 |
| ≤49 | 76.6 | 17.5 | 0.3 | 5.6 | 82.2 | +63.1 |
| ≤54 | 83.1 | 10.9 | 0.5 | 5.4 | 88.5 | +77.3 |
| ≤59 | 87.2 | 6.9 | 1.0 | 4.9 | 92.1 | +86.4 |
| ≤64 | 90.2 | 3.8 | 2.0 | 3.9 | 94.1 | +93.9 |
| ≤69 | 92.0 | 2.0 | 2.9 | 2.9 | 94.9 | +96.9 |
| ≤74 | 92.9 | 1.1 | 3.6 | 2.3 | 95.2 | +96.2 |
| ≤79 | 93.4 | 0.6 | 4.6 | 1.3 | 94.7 | +95.1 |
| ≤84 | 93.8 | 0.2 | 5.4 | 0.4 | 94.2 | +94.2 |
| ≤89 | 94.0 | 0.0 | 5.8 | 0.1 | 94.1 | +93.8 |
| ≤94 | 94.0 | 0.0 | 5.9 | 0.0 | 94.0 | +93.7 |
| ≤100 | 94.0 | 0.0 | 6.0 | -0.1 | 94.0 | +93.7 |

Ibyashyizwemo, ibiri munsu, ibyibeshyweho, n'ibyakuwemo bigahuzwa kugira ngo bigere ku 100.

Ishusho ya 11 (idolari 5.00 ku muni ku murongo w'ubukene PPP 2005): Umugabane w'ingo zose zo mu irasantego (ni ukuvuga, icyiciro cyo ku murongo wafatiweho cyangwa mu nsi yawo), umugabane w'ingo zo mu irasantego zikennye (ni ukuvuga, zifite imibereho iri muni y'umurongo w'ubukene), umugabane w'ingo zikennye zashyizwe mu irasantego, n'umubare w'ingo zikennye zagize intsinzi mu irasantego (mo imbere) ku ngo zidakennye zashyizwe mu irasantego byo kwibeshya ku ikarita y'icyiciro ya 2010–2011 ikoreshejwe ku itsinda ry'inyigo yo kwemeza

| % ry'ingo zose zakoreweho ubushakashatsi | % ry'ingo zakoreweho ubushakashatsi zikennye | % ry'ingo zikennye zakoreweho ubushakashatsi | Ingo zikennye zakoreweho ubushakashatsi ugereranyije n'ingo zidakennye zakoreweho ubushakashatsi |
|---|---|---|---|
| 0.4 | 100.0 | 0.4 | Izikennye gusa ni zo zakoreweho ubushakashatsi |
| 1.8 | 100.0 | 1.9 | Izikennye gusa ni zo zakoreweho ubushakashatsi |
| 6.0 | 100.0 | 6.3 | Izikennye gusa ni zo zakoreweho ubushakashatsi |
| 13.1 | 100.0 | 13.9 | Izikennye gusa ni zo zakoreweho ubushakashatsi |
| 22.7 | 100.0 | 24.1 | Izikennye gusa ni zo zakoreweho ubushakashatsi |
| 33.8 | 99.9 | 35.9 | 1,420.1:1 |
| 45.4 | 99.9 | 48.2 | 1,210.3:1 |
| 57.8 | 99.9 | 61.3 | 723.1:1 |
| 68.2 | 99.8 | 72.4 | 442.5:1 |
| 76.8 | 99.7 | 81.4 | 302.3:1 |
| 83.6 | 99.4 | 88.3 | 165.1:1 |
| 88.1 | 98.9 | 92.6 | 90.5:1 |
| 92.2 | 97.9 | 95.8 | 45.7:1 |
| 94.9 | 96.9 | 97.8 | 31.3:1 |
| 96.5 | 96.3 | 98.7 | 25.9:1 |
| 98.0 | 95.3 | 99.2 | 20.4:1 |
| 99.2 | 94.5 | 99.6 | 17.3:1 |
| 99.8 | 94.2 | 99.9 | 16.1:1 |
| 99.9 | 94.1 | 99.9 | 16.0:1 |
| 100.0 | 94.0 | 99.9 | 15.8:1 |

**Imbonerahamwe
ku idolari 8.44 ku munsu ku murungo
w'ubukene PPP 2005**

Ishusho ya 4 (idolari 8.44 ku muni ku murongo w'ubukene PPP
2005): Urugero rwemejwe ubukene buriho ruhujwe
n'ibyiciro

| Niba icyiciro cy'urugo ari . . . | . . . hanyuma urugero (%) rwo kuba muni y'umurongo w'ubukene |
|-------------------------------------|---|
| 0-4 | 100.0 |
| 5-9 | 100.0 |
| 10-14 | 100.0 |
| 15-19 | 100.0 |
| 20-24 | 100.0 |
| 25-29 | 100.0 |
| 30-34 | 100.0 |
| 35-39 | 100.0 |
| 40-44 | 99.9 |
| 45-49 | 99.9 |
| 50-54 | 99.9 |
| 55-59 | 98.6 |
| 60-64 | 94.8 |
| 65-69 | 86.2 |
| 70-74 | 74.3 |
| 75-79 | 65.7 |
| 80-84 | 58.1 |
| 85-89 | 45.6 |
| 90-94 | 45.6 |
| 95-100 | 45.6 |

Ishusho ya 6 (idolari 8.44 ku munsu ku murongo w'ubukene PPP 2005): Kuri buri cyiciro, icyegeranyo cy'amatandukaniro hagati y'imiterere y'ubukene yemejwe n'imiterere y'ubukene nyayo kun go, hanwe n'imyitangirizwa y'icyizere, kuva kuri *bootstraps* 1,000 za $n = 16,384$, ikarita y'icyiciro ya 2010–2011 ikoreshejwe ku itsinda ryo kwemeza

| Icyiciro | Ikigereranyo ukuyemo agaciro nyako | | | |
|----------|------------------------------------|--|-------------|-------------|
| | Ikinyuranyo | Ikigereranyo cyizewe (\pm ijanisha) | | |
| | | 90 ku ijana | 95 ku ijana | 99 ku ijana |
| 0–4 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5–9 | 0.0 | 0.0 | 0.0 | 0.0 |
| 10–14 | 0.0 | 0.0 | 0.0 | 0.0 |
| 15–19 | 0.0 | 0.0 | 0.0 | 0.0 |
| 20–24 | 0.0 | 0.0 | 0.0 | 0.0 |
| 25–29 | +0.1 | 0.1 | 0.1 | 0.1 |
| 30–34 | 0.0 | 0.0 | 0.0 | 0.0 |
| 35–39 | 0.0 | 0.1 | 0.1 | 0.1 |
| 40–44 | -0.1 | 0.0 | 0.0 | 0.0 |
| 45–49 | -0.1 | 0.0 | 0.0 | 0.0 |
| 50–54 | 0.0 | 0.1 | 0.1 | 0.1 |
| 55–59 | +2.6 | 1.4 | 1.6 | 2.1 |
| 60–64 | +11.6 | 3.8 | 4.5 | 5.9 |
| 65–69 | -0.3 | 2.8 | 3.4 | 4.4 |
| 70–74 | -15.8 | 9.4 | 9.7 | 10.3 |
| 75–79 | +5.2 | 5.2 | 6.3 | 8.3 |
| 80–84 | -14.2 | 9.7 | 10.1 | 11.0 |
| 85–89 | -5.7 | 8.9 | 10.9 | 14.7 |
| 90–94 | -26.8 | 22.6 | 24.4 | 37.1 |
| 95–100 | +14.3 | 20.7 | 24.4 | 31.3 |

Ishusho ya 7 (idolari 8.44 ku munsu ku murongo w'ubukene PPP 2005): icyegeranyo cy'amatandukaniro hagati y'amajanja y'ubukene yemejwe n'imibare nyakuri ku itsinda mu gihe runaka, hamwe n'imyitangirizwa y'icyizere, kuri *bootstraps* 1,000 z'ingano z'amatsinda y'inyigo atandukanye, ikarita y'icyiciro ya 2010–2011 ikoreshejwe ku itsinda ryemeza

| Urugero ingano | Ikigereranyo ukuyemo agaciro nyako | | | |
|-------------------|------------------------------------|--|-------------|-------------|
| | Ikinyuranyo | Ikigereranyo cyizewe (\pm ijanisha) | | |
| <i>n</i> | | | 90 ku ijana | 95 ku ijana |
| 1 | +0.1 | 6.9 | 35.7 | 68.4 |
| 4 | -0.1 | 12.7 | 17.5 | 29.5 |
| 8 | -0.2 | 8.9 | 11.7 | 21.2 |
| 16 | 0.0 | 6.4 | 9.0 | 16.8 |
| 32 | 0.0 | 4.7 | 6.6 | 11.2 |
| 64 | +0.1 | 3.9 | 5.0 | 7.3 |
| 128 | +0.2 | 2.7 | 3.3 | 4.9 |
| 256 | +0.2 | 2.0 | 2.4 | 3.4 |
| 512 | +0.2 | 1.5 | 1.7 | 2.3 |
| 1,024 | +0.2 | 1.0 | 1.2 | 1.6 |
| 2,048 | +0.2 | 0.7 | 0.8 | 1.2 |
| 4,096 | +0.2 | 0.5 | 0.6 | 0.8 |
| 8,192 | +0.2 | 0.4 | 0.4 | 0.6 |
| 16,384 | +0.2 | 0.3 | 0.3 | 0.4 |

Ishusho ya 10 (idolari 8.44 ku munsu ku murongo w'ubukene PPP 2005): Amajanisha y'ingo ku cyiciro cyo ku murongo wafatiweho no gushyira mu byiciro ku irasantego, hamwe n'ijanisha ryo hejuru, na BPAC, ikarita y'icyiciro ya 2010–2011 ku itsinda ry'inyigo ryo kwemeza

| Umubare ntarengwa | <u>Ibyashyizwemo:</u> | <u>Ibiri munsu:</u> | <u>Ibyibeshyweho:</u> | <u>Ibyakuwemo:</u> | <u>Ikigero</u> | <u>BPAC</u> |
|----------------------|--|---|---|---|--|---------------------|
| | <Umurongo w'ubukene washyizwe mu irasantego nta kwibeshya | < Umurongo w'ubukene utarashyizwe mu irasantego habayeho kwibeshya | ≥ Umurongo w'ubukene washyizwe mu habayeho kwibeshya | ≥ Umurongo w'ubukene utarashyizwe mu irasantego nta kwibeshya | cy'ibyashobotse: Ibyashyizwemo + Ibyakuwemo | Reba ibyanditswe |
| ≤4 | 0.4 | 96.9 | 0.0 | 2.7 | 3.0 | -99.3 |
| ≤9 | 1.8 | 95.4 | 0.0 | 2.7 | 4.5 | -96.3 |
| ≤14 | 6.0 | 91.3 | 0.0 | 2.7 | 8.6 | -87.7 |
| ≤19 | 13.1 | 84.1 | 0.0 | 2.7 | 15.8 | -73.0 |
| ≤24 | 22.7 | 74.5 | 0.0 | 2.7 | 25.4 | -53.3 |
| ≤29 | 33.8 | 63.4 | 0.0 | 2.7 | 36.5 | -30.4 |
| ≤34 | 45.4 | 51.8 | 0.0 | 2.7 | 48.1 | -6.6 |
| ≤39 | 57.8 | 39.4 | 0.0 | 2.6 | 60.4 | +18.9 |
| ≤44 | 68.2 | 29.0 | 0.0 | 2.6 | 70.9 | +40.4 |
| ≤49 | 76.8 | 20.4 | 0.0 | 2.6 | 79.4 | +58.0 |
| ≤54 | 83.6 | 13.7 | 0.0 | 2.6 | 86.2 | +71.9 |
| ≤59 | 87.9 | 9.3 | 0.2 | 2.5 | 90.4 | +81.1 |
| ≤64 | 91.5 | 5.8 | 0.7 | 2.0 | 93.4 | +88.9 |
| ≤69 | 93.8 | 3.4 | 1.1 | 1.6 | 95.4 | +94.2 |
| ≤74 | 95.2 | 2.0 | 1.3 | 1.4 | 96.6 | +97.1 |
| ≤79 | 96.1 | 1.1 | 1.9 | 0.8 | 96.9 | +98.1 |
| ≤84 | 96.9 | 0.4 | 2.4 | 0.3 | 97.2 | +97.6 |
| ≤89 | 97.2 | 0.0 | 2.6 | 0.0 | 97.2 | +97.3 |
| ≤94 | 97.2 | 0.0 | 2.7 | 0.0 | 97.2 | +97.3 |
| ≤100 | 97.2 | 0.0 | 2.8 | -0.1 | 97.2 | +97.2 |

Ibyashyizwemo, ibiri munsu, ibyibeshyweho, n'ibyakuwemo bigahuzwa kugira ngo bigere ku 100.

Ishusho ya 11 (idolari 5.00 ku muni ku murongo w'ubukene PPP 2005): Umugabane w'ingo zose zo mu irasantego (ni ukuvuga, icyiciro cyo ku murongo wafatiweho cyangwa mu nsi yawo), umugabane w'ingo zo mu irasantego zikennye (ni ukuvuga, zifite imibereho iri muni y'umurongo w'ubukene), umugabane w'ingo zikennye zashyizwe mu irasantego, n'umubare w'ingo zikennye zagize intsinzi mu irasantego (mo imbere) ku ngo zidakennye zashyizwe mu irasantego byo kwibeshya ku ikarita y'icyiciro ya 2010–2011 ikoreshejwe ku itsinda ry'inyigo yo kwemeza

| % ry'ingo zose zakoreweho ubushakashatsi | % ry'ingo zakoreweho ubushakashatsi zikennye | % ry'ingo zikennye zakoreweho ubushakashatsi | Ingo zikennye zakoreweho ubushakashatsi ugereranyije n'ingo zidakennye zakoreweho ubushakashatsi |
|---|---|---|---|
| 0.4 | 100.0 | 0.4 | Izikennye gusa ni zo zakoreweho ubushakashatsi |
| 1.8 | 100.0 | 1.9 | Izikennye gusa ni zo zakoreweho ubushakashatsi |
| 6.0 | 100.0 | 6.1 | Izikennye gusa ni zo zakoreweho ubushakashatsi |
| 13.1 | 100.0 | 13.5 | Izikennye gusa ni zo zakoreweho ubushakashatsi |
| 22.7 | 100.0 | 23.3 | Izikennye gusa ni zo zakoreweho ubushakashatsi |
| 33.8 | 100.0 | 34.8 | 2,563.7:1 |
| 45.4 | 100.0 | 46.7 | 3,440.7:1 |
| 57.8 | 100.0 | 59.4 | 2,266.5:1 |
| 68.2 | 100.0 | 70.1 | 2,676.2:1 |
| 76.8 | 100.0 | 78.9 | 3,012.4:1 |
| 83.6 | 100.0 | 85.9 | 2,609.5:1 |
| 88.1 | 99.8 | 90.3 | 417.2:1 |
| 92.2 | 99.3 | 94.0 | 132.9:1 |
| 94.9 | 98.8 | 96.4 | 83.8:1 |
| 96.5 | 98.7 | 97.8 | 73.9:1 |
| 98.0 | 98.1 | 98.8 | 51.6:1 |
| 99.2 | 97.6 | 99.5 | 41.2:1 |
| 99.8 | 97.4 | 99.9 | 36.8:1 |
| 99.9 | 97.3 | 99.9 | 36.4:1 |
| 100.0 | 97.2 | 99.9 | 35.3:1 |