

# *Proposed methodology for estimating international migration*

*Work Session on Migration Statistics*

*(Geneva, Switzerland, 18-20 May 2016)*



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# 1. Introduction



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# Introduction



- Population: 48,747,632 hab. (2016)
- Area: 1,141,748 km<sup>2</sup>
- GDP (PPP): \$14,164 per capita
- Capital City: Bogotá (7,980,001 hab.)
- Borders with 2 oceans and 5 countries

# Introduction

- The statistics of international migration are the weakest point of demographic information
- A large number of countries does not have this information and in others the information comes from census
- In this sense, the administrative registers are a good source of information



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## *2. Methodology*



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# The administrative register of entries and exits

- The government organization in charge of administrate the register of entries and exits is Migración Colombia (since 2012)
- It records the entries and exits (with date of travel) of every person who cross a control point.
- Each person is represented by a anonymized identifier.
- Also records administrative, temporality, demographic, geographic and socio-economic data.



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# Geographic context

- Geographic coverage: 39 border control points,  
National level
- Due the geographic position, migrations are made mainly by air (73%). 84 % of travels are made by air.
- Almost 74% of air travels are made by El Dorado airport - Bogotá



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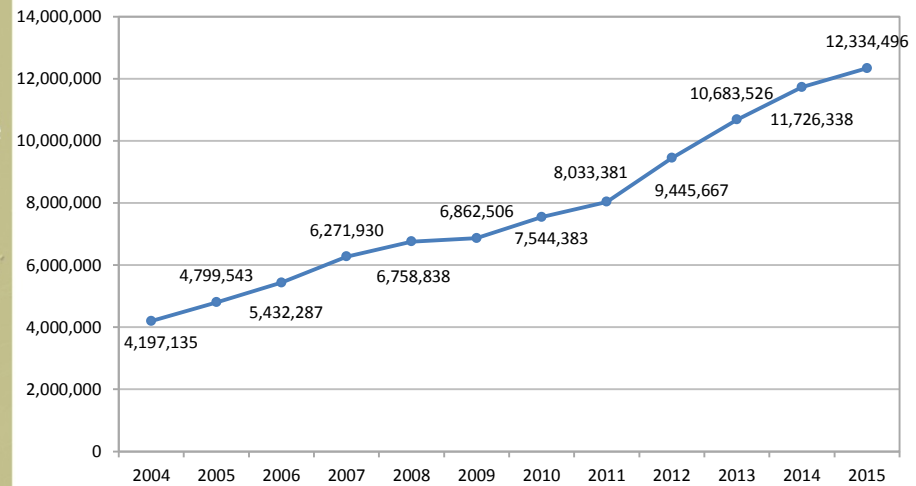




## Immigration control posts



### Number of travelers by year



# The administrative register

| <b>Variable Type</b>         | <b>Description of Information</b>                                                                |
|------------------------------|--------------------------------------------------------------------------------------------------|
| <b>Individual identifier</b> | Previously anonymised individual identifier                                                      |
| <b>Administrative</b>        | Document type<br>Number of trip<br>Country issuing passport<br>Check Point<br>Means of transport |
| <b>VISA</b>                  | Type of Visa<br>Country issuing Visa<br>Date of issue of the Visa                                |



# The administrative register

| <b>Variable Type</b>    | <b>Description of Information</b>                             |
|-------------------------|---------------------------------------------------------------|
| <b>Flow type travel</b> | I: income, E: outcome                                         |
| <b>Temporality</b>      | Date of trip                                                  |
| <b>Demographics</b>     | Sex<br>Birthday<br>Country of birth<br>Traveler's nationality |
| <b>Geographic</b>       | Residence country<br>Country Destination / Origin             |
| <b>Socio-economics</b>  | Occupation<br>Trip reason                                     |



# Similar exercises

- McCann, Poot y Sanderson (2010) used a **longitudinal sample** of every international travel made until July 2005 by 13,647 New Zealand citizens and 6,882 British who emigrated to Australia
- Schwabish (2011) took a 1% random **longitudinal sample** of the register of Social Security to deduce the emigration rate of immigrants of US. The sample was made of 325,000 immigrants from 1978 to 2003. The strategy consisted in identify the immigrants through the information of the place of birth and then calculate the proportion of immigrants that “emigrate” from the Social Security System.



# The proposed methodology: contributions

- The first contribution is the innovation, we have developed an estimate of migration based on the actual duration of stay of people in and out of Colombia.
- The register size is more than 91.4 million trips and 16.7 million people that ensure robust results.
- Longitudinal data allowed to rebuild the travel itineraries of people.
- It is possible to apply similar definition of emigration and immigration.



# Key issues

## 1. Anonymization of the information

|                  |     |           |           |            |
|------------------|-----|-----------|-----------|------------|
| Country of Birth | Sex | Birthdate | Last Name | First Name |
|------------------|-----|-----------|-----------|------------|

## 2. Concepts

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Country of usual residence:</b> | The country which a person lives, that is so, the country in which he or she has a place to live where he or she normally spend the daily period of rest. Temporary travel abroad for purposes of recreation, holiday, visit to friends and relatives, business, medical treatment or religious pilgrimage does not change a person's country of usual residence                                      |
| <b>Long-term migrant:</b>          | A person who moves to a county other than that of his or her usual residence for a period of at list a year (12 months), so that the country of destination effectively becomes his or her new country of usual residence. From the perspective of the country of departure the person will be a long-term emigrant and from that of the country of arrival the person will by a long-term immigrant. |

Font: Taken from Recommendations on Statistics of International Migration Revision 1 (1999), pp. 10



# Information Analysis



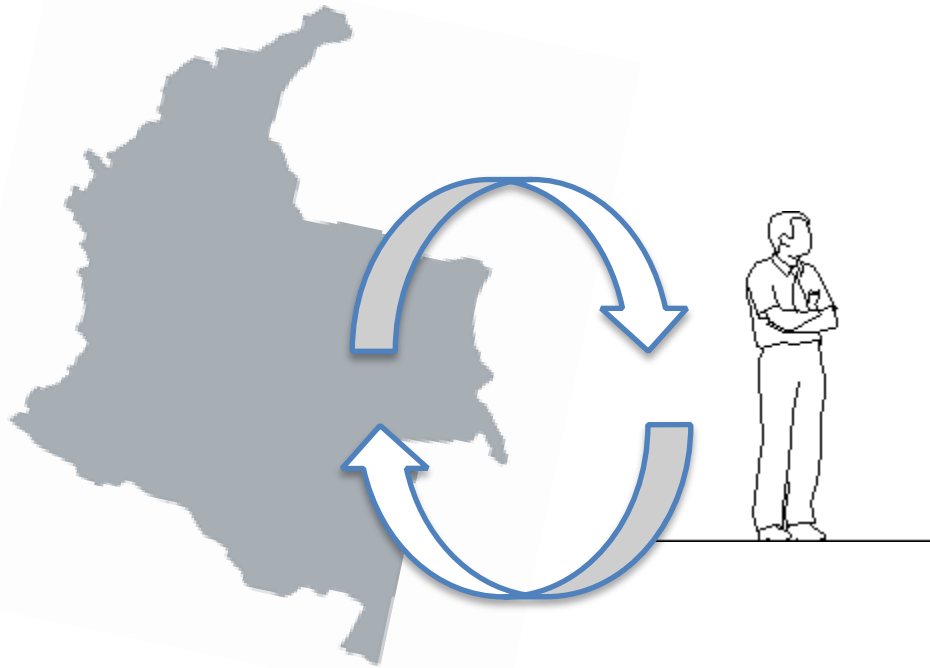
Transforming a data base with a register for each trip, in a travelers data base with n registers according with the numbers of travels.

Taking into account the information of the trips is possible to determinate if it exists a **MIGRATION**

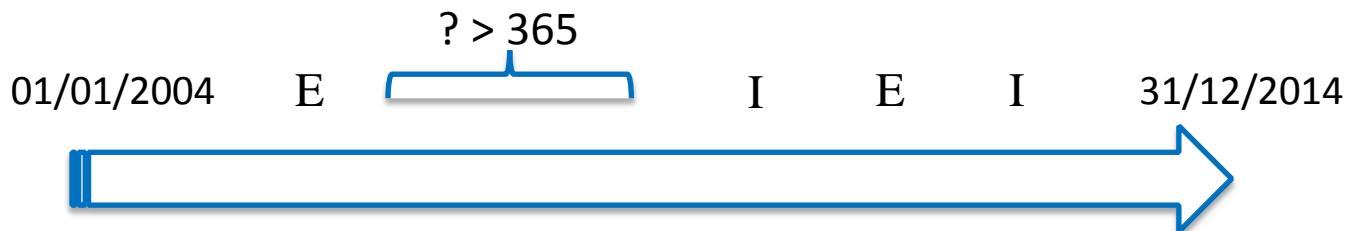
**DATA BASE OF PERSONS: 1 register with n movements**



# Information Analysis



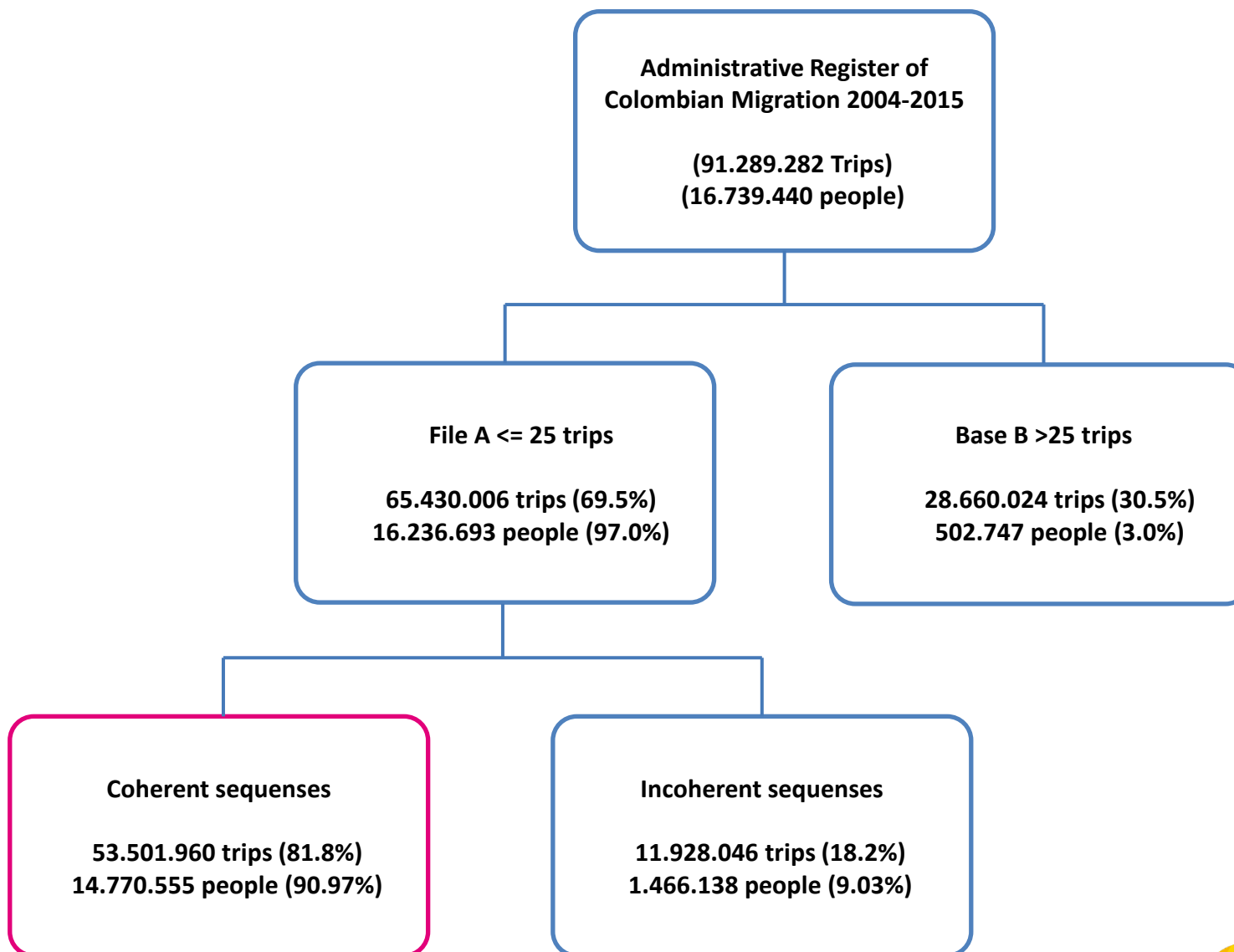
1. Total identification of people.
2. Travel counting.
3. Travel sequences identification
4. Calculate of time among travels  
 $t_0 - t_1 - t_2 - \dots - t_n$   
01/01/2004 - 31/12/2014.
5. Habitual Residence identification.
6. Changes of habitual residence identification (UN definition).



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# Analysis of the information



# 3. Results



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# Results

| Colombian Migration                         | 2005   | 2006   | 2007   | 2008   | 2009   | 2010   | 2011   | 2012   | 2013   |
|---------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Denmark – MC                                | 65     | 79     | 84     | 105    | 107    | 74     | 78     | 58     | 59     |
| Spain – MC                                  | 15,553 | 22,971 | 29,694 | 30,414 | 25,981 | 21,022 | 21,619 | 20,964 | 19,179 |
| Finland – MC                                | 44     | 35     | 47     | 47     | 38     | 30     | 28     | 60     | 14     |
| Italy – MC                                  | 1,376  | 1,483  | 1,884  | 2,044  | 2,088  | 1,764  | 1,560  | 1,195  | 992    |
| Norway – MC                                 | 122    | 128    | 145    | 140    | 123    | 140    | 125    | 113    | 79     |
| New Zealand – MC                            | 34     | 24     | 30     | 39     | 51     | 32     | 41     | 47     | 48     |
| Sweden – MC                                 | 242    | 282    | 300    | 379    | 292    | 297    | 275    | 174    | 181    |
| Switzerland – MC                            | 271    | 230    | 229    | 184    | 206    | 142    | 162    | 152    | 156    |
| Canada – MC                                 | 2,389  | 2,618  | 2,912  | 3,218  | 2,222  | 2,142  | 2,261  | 2,121  | 1,934  |
| United States – MC                          | 15,930 | 15,648 | 15,029 | 16,148 | 16,710 | 16,018 | 14,676 | 16,278 | 20,455 |
| Flows recorded in the destination countries | 2005   | 2006   | 2007   | 2008   | 2009   | 2010   | 2011   | 2012   | 2013   |
| Denmark – IBR                               | 93     | 114    | 94     | 112    | 92     | 97     | 76     | 81     | 153    |
| Spain – IBR                                 | 21,351 | 28,650 | 36,434 | 36,417 | 20,946 | 14,119 | 13,676 | 10,433 | 9,268  |
| Finland – IBR                               | 35     | 39     | 37     | 37     | 31     | 33     | 37     | 44     | 31     |
| Italy – IBR                                 | 2,136  | 1,907  | 1,948  | 2,446  | 2,366  | 2,391  | 2,036  | 1,756  | 1,298  |
| Norway – IBR                                | 145    | 163    | 173    | 147    | 104    | 138    | 180    | 138    | 115    |
| New Zealand – IBR                           | 40     | 23     | 33     | 49     | 52     | 56     | 67     | 57     | 78     |
| Sweden – IBR                                | 248    | 345    | 273    | 299    | 273    | 319    | 294    | 270    | 258    |
| Switzerland – IFR                           | 435    | 449    | 477    | 573    | 522    | 540    | 431    | 440    | 469    |
| Canada – IFC                                | 6,424  | 6,535  | 5,357  | 5,452  | 4,652  | 5,218  | 4,366  | 3,741  | 3,631  |
| United States – IFC                         | 25,566 | 43,144 | 33,187 | 30,213 | 27,849 | 22,406 | 22,635 | 20,931 | 21,131 |



# Results

| Destination country | Migration flows measured from Colombian Migration | Immigration flows measured in destination countries | Proportion | Adjustment factor |
|---------------------|---------------------------------------------------|-----------------------------------------------------|------------|-------------------|
| Denmark             | 79                                                | 101                                                 | 77.7%      | 1.29              |
| Spain               | 23,044                                            | 21,255                                              | 108.4%     | 0.92              |
| Finland             | 38                                                | 35                                                  | 107.5%     | 0.93              |
| Italy               | 1,598                                             | 2,032                                               | 78.7%      | 1.27              |
| Ireland             | 29                                                | 33                                                  | 87.0%      | 1.15              |
| Norway              | 124                                               | 145                                                 | 85.6%      | 1.17              |
| New Zealand         | 38                                                | 51                                                  | 76.0%      | 1.32              |
| Sweden              | 269                                               | 287                                                 | 93.9%      | 1.06              |
| Belgium             | 96                                                | 239                                                 | 40.1%      | 2.49              |
| Switzerland         | 192                                               | 482                                                 | 39.9%      | 2.50              |
| Canada              | 2,424                                             | 5,042                                               | 48.1%      | 2.08              |
| United States       | 16,321                                            | 27,451                                              | 59.5%      | 1.68              |

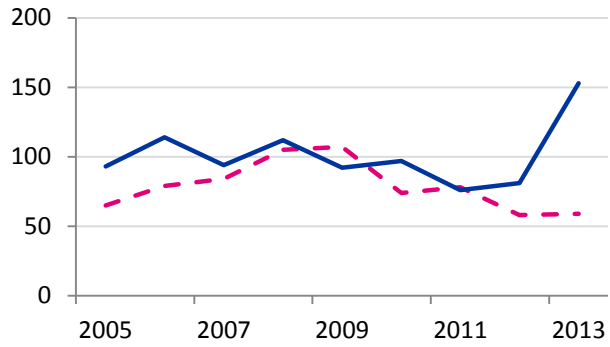
| Global Proportion | Global Adjustment Factor |
|-------------------|--------------------------|
| <b>76.8%</b>      | <b>1.30</b>              |



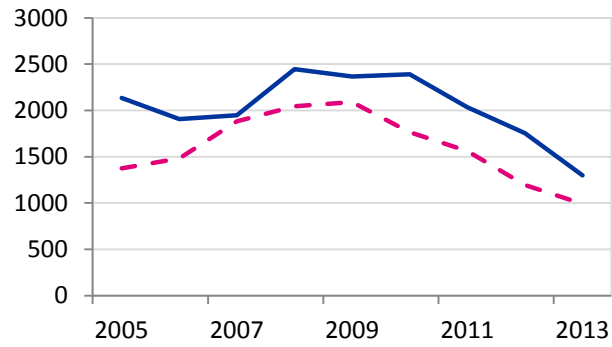
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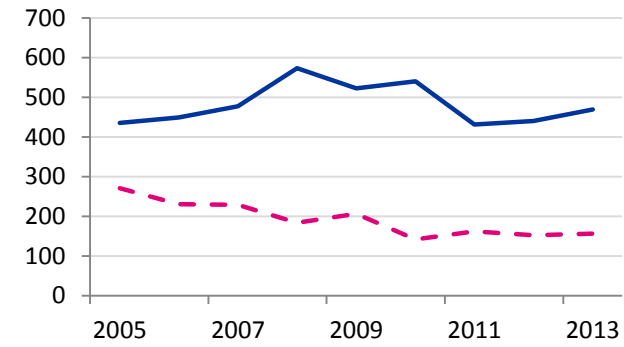
# Results



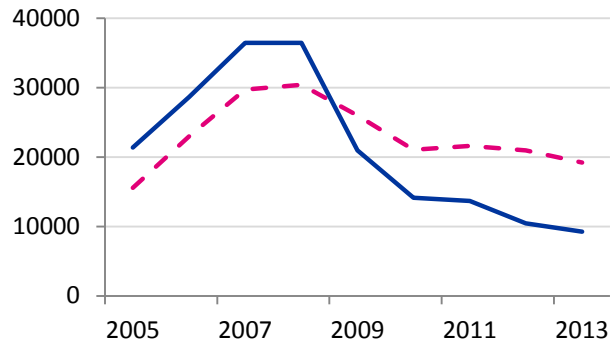
--- Denmark - MC    — Denmark-IBR



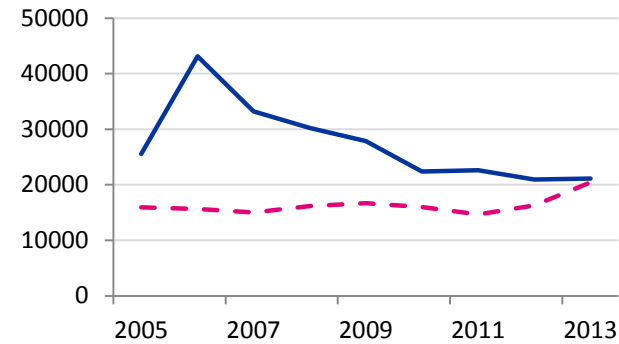
--- Italy - MC    — Italy - IBR



--- Switzerland - MC    — Switzerland - IFR



--- Spain - MC    — Spain - IBR



--- United States - MC    — United States - IFC



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## *4. Conclusions*



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# Conclusions

- The results are robust the estimated data coincide with what is expected from knowledge of Colombian migration reported by the census
- The comparison of the flows obtained with the proposal and emigration recorded in destination countries has yielded different but consistent results
- Although estimates are not perfect, the data obtained allow improving understanding of recent external migration patterns
- In conclusion, the methodology presented in this article is the first of its kind in the Latin American region and one of the few developed at the global level from a record of borders



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