Global Migration Data Sheet 2005–10

Unique estimates of migration flows between the top 50 sending and receiving countries

The bilateral flows between 196 countries are estimated from sequential stock tables (see overleaf for details). They are comparable across countries and capture the number of people who changed their country of residence between mid-2005 and mid-2010.

The circular plot shows the estimates of directional flows between the 50 countries that send and/or receive at least 0.5% of the world's migrants in 2005-10. Tick marks indicate gross migration (in + out) in 100,000's.
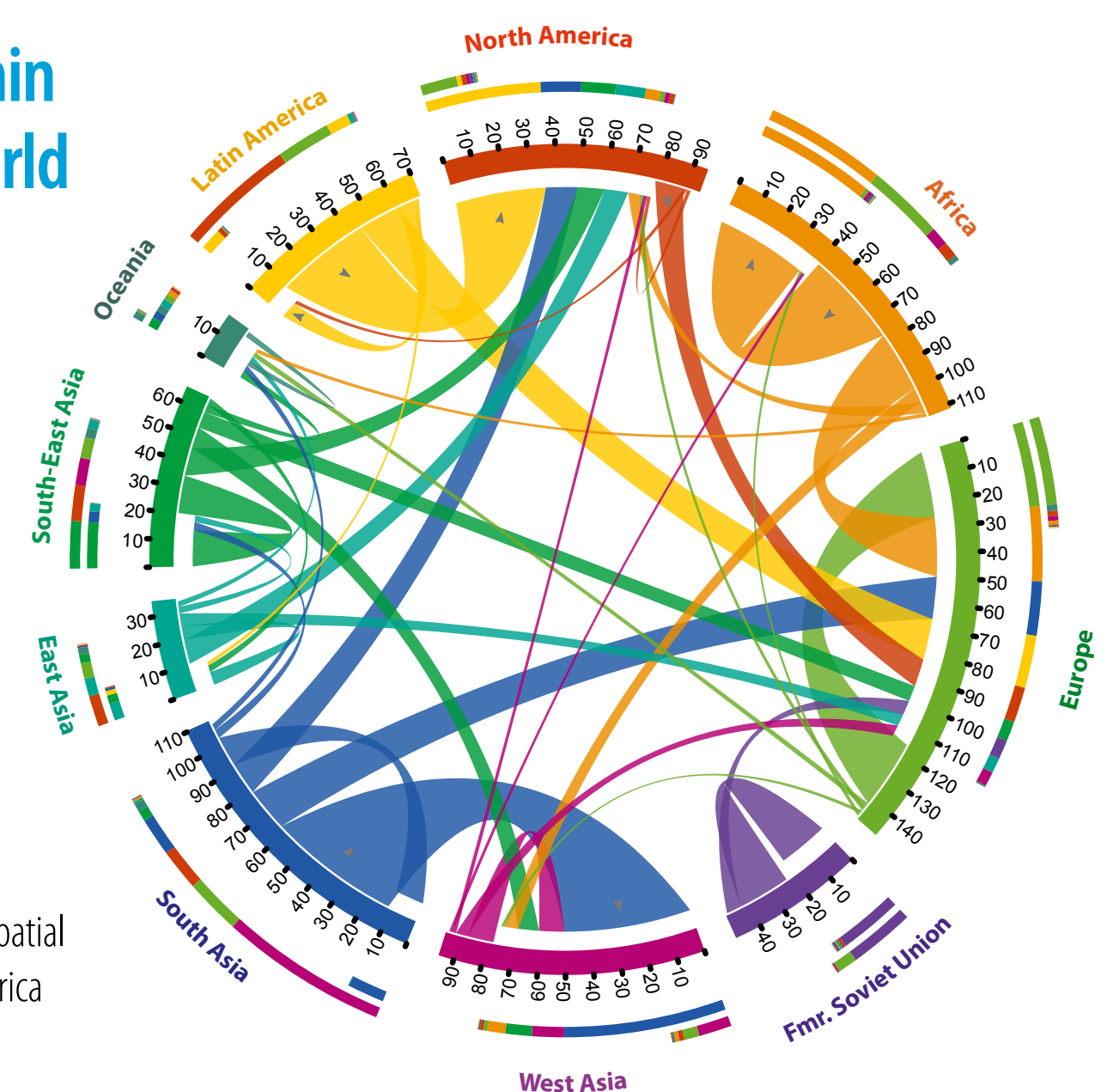
Migration flows within and between ten world regions, in 100,000's

This circular plot shows all global bilateral migration flows for the five-year period mid-2005 to mid-2010, classified into a manageable set of ten world regions.
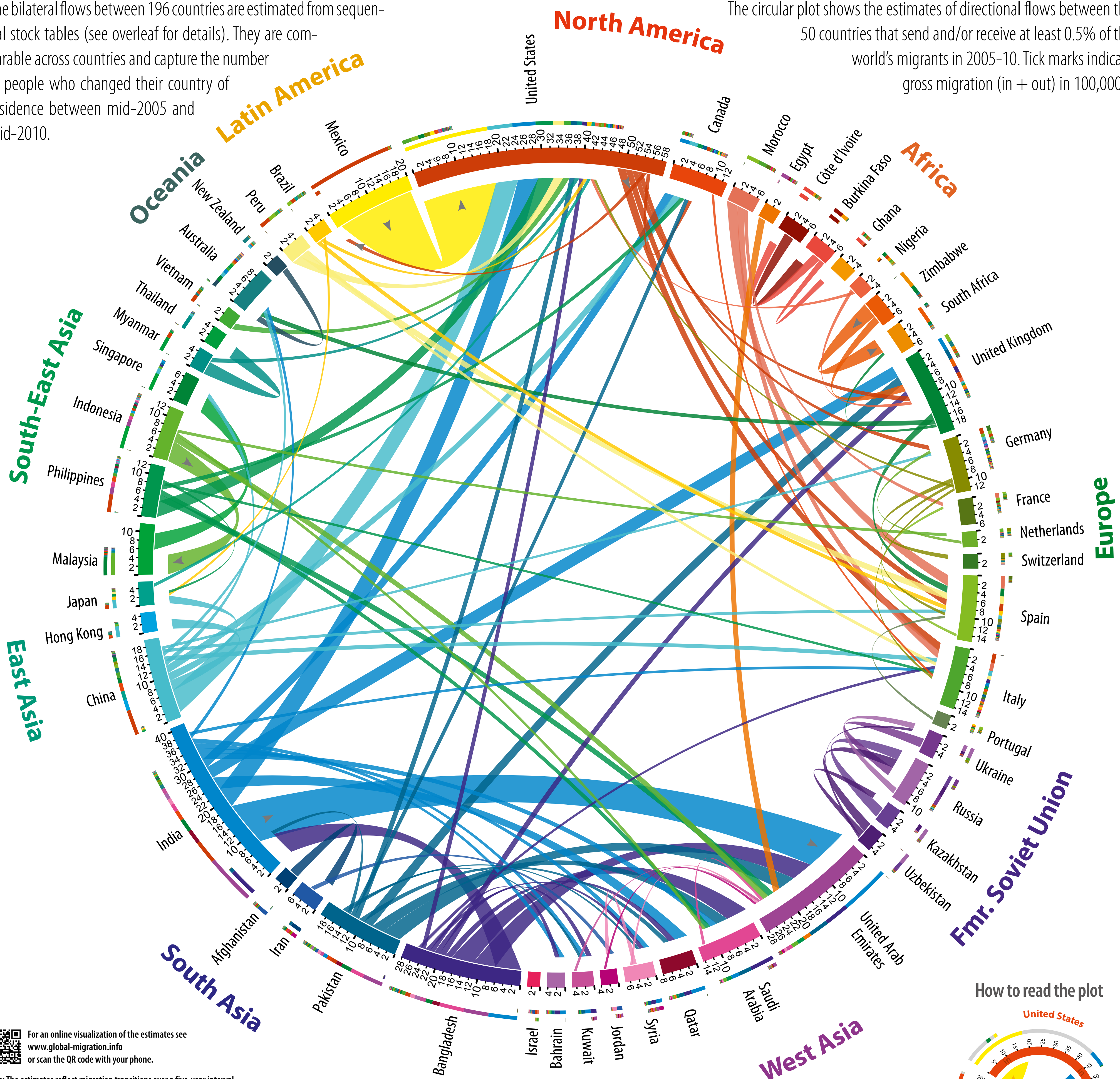
Key features of the global migration system include the high concentration of African migration within the continent (with the exception of Northern Africa), the 'closed' migration system of the former Soviet Union, and the high spatial focus of Asian emigration to North America and the Gulf states.

How to read the plot

Origin and destination countries are represented by segments around the circle.

Each country is assigned a colour (Mexico: yellow); flows have the same colour as the origin.

Flow from Mexico to USA: no gap at origin, large gap at destination; the width indicates its size

Total emigration from Mexico, coloured by destination country (here USA)

Total immigration to Mexico, coloured by origin country (here small [return] flow from USA)
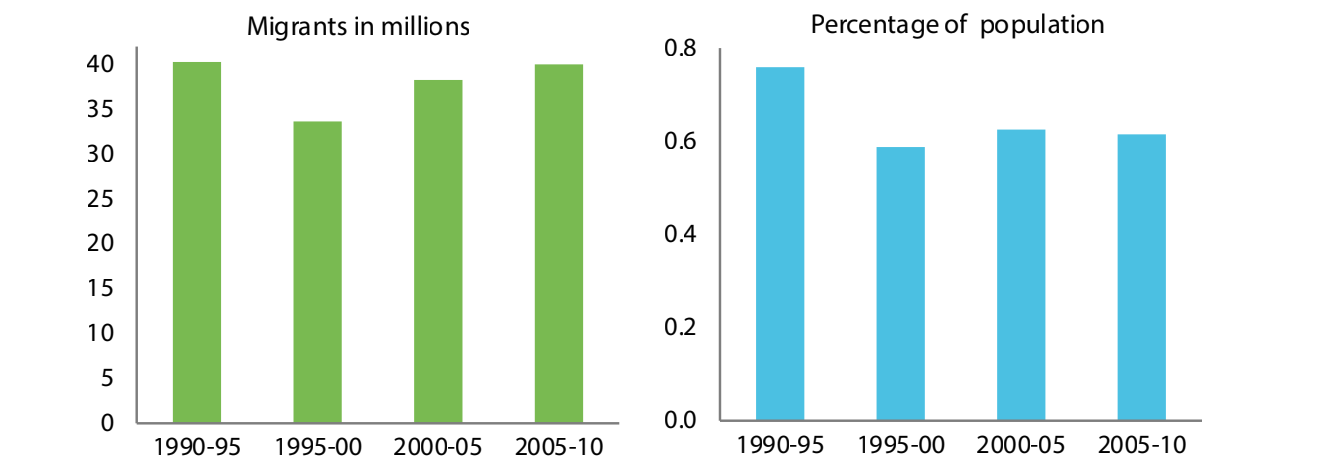
Tick marks indicate a country's gross migration in 100,000's (here 4.1 mio in India)

The global intensity of migration

Our flow estimates suggest a stable intensity of global migration, with just over 0.6 per cent of the world population moving over five year periods, 1990-95 to 2005-10.
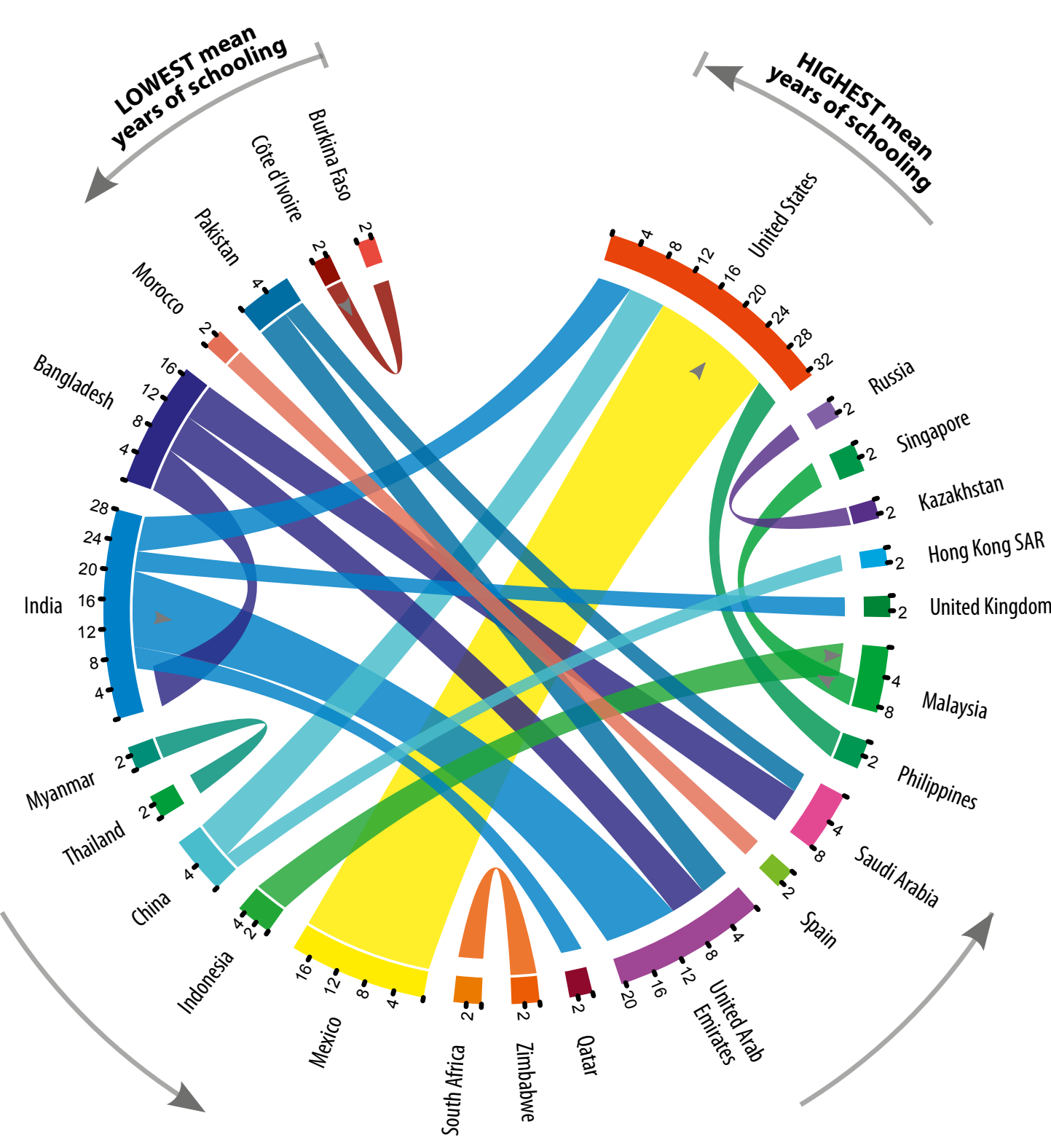
Migrants in millions

Percentage of population

Migration to, from and within ten world regions in 2005-10

The table shows the intensities of migration to, from and within ten major world regions in millions. In absolute terms, Europe was the biggest receiver of migrants (8.9 million over five years), while South Asia was the biggest sender, with 8.7 million emigrants. In Africa and the former Soviet Union, emigration intensities were lower than within-region flows.

Region	Moving into the region	Moving out of the region	Net migration by region	Moving within the region
North America	7.64	1.58	6.06	0.14
Africa	0.41	3.49	-3.09	3.63
Europe	8.92	0.70	8.21	2.64
Frm. Soviet Union	0.33	0.67	-0.34	1.98
West Asia	6.73	0.83	5.90	0.99
South Asia	0.02	8.72	-8.70	1.15
East Asia	0.52	1.97	-1.45	0.53
South-East Asia	0.60	3.11	-2.51	1.42
Oceania	1.22	0.09	1.13	0.21
Latin America	0.23	5.46	-5.23	0.64

The 20 largest country-to-country flows in 2005-10

Visualizing the 20 largest flows in the world in a circular layout and arranging origins and destinations by each country's mean years of schooling* reveals a remarkably consistent pattern of migration to countries with higher education levels. The size of the flow is not proportional to the difference in education level.

The circular plot depicts the 20 largest country-to-country flows (in absolute terms) in 2005-10. The origins and destinations of these flows are arranged by level of education, with Burkina Faso having the lowest mean years of schooling and the United States the highest. Tick marks indicate the size of the migration flow in 100,000 increments. Flows have the same colour as the origin country.

It appears that most of the largest flows originated in Asia and went to the oil-rich Gulf countries and the United States. Exceptions to this trend are the flow from Mexico to the United States and flows within Africa (Côte d'Ivoire to Burkina Faso and Zimbabwe to South Africa). Malaysia and India were the only countries to be both receivers and senders of very large flows, highlighting the strong effect that migration and differentials in education levels have on the redistribution of population.

* Estimates of adult mean years of schooling provided by Wittgenstein Centre Data Lab.

Rank	Origin → Destination	Flow, in 1000	Rank	Origin → Destination	Flow, in 1000
1	Mexico → United States	1845	11	Philippines → United States	384
2	India → United Arab Emirates	1083	12	Zimbabwe → South Africa	373
3	Bangladesh → India	618	13	Myanmar → Thailand	314
4	China → United States	546	14	India → Qatar	311
5	Bangladesh → United Arab Emir.	536	15	Pakistan → Saudi Arabia	289
6	Bangladesh → Saudi Arabia	527	16	India → United Kingdom	283
7	India → United States	502	17	Morocco → Spain	273
8	Indonesia → Malaysia	489	18	Kazakhstan → Russia	258
9	Pakistan → United Arab Emirates	437	19	Côte d'Ivoire → Burkina Faso	241
10	Malaysia → Singapore	389	20	China → Hong Kong SAR	238

Estimating a unique set of global bilateral migration flows

International moves are typically enumerated using either a measurement of migrant stocks or migration flows. A migrant stock is defined as the total number of international migrants present in a given country at a particular point in time. A migration flow is defined as the number of people arriving or leaving a given country during a specific period of time. Flow measures reflect the dynamics of the migration process.

As migration flow data is often incomplete and not comparable across nations, we estimate the number of movements by linking changes in migrant stock data over time. Using statistical missing data methods, estimates of the five-year migrant flows that are required to meet differences in migrant stock totals are produced. For example, if the number of foreign-born in the United States increases between two time periods, the minimum migrant flows between the US and all other countries in the world that are required to meet this increase are estimated.

In the hypothetical example shown in Figure 1, the location of people born in Country A is given in 2005 and 2010. As we assume no births and deaths in this example, the stock of migrants across all (of the possible 3) locations in both years are equal (270 + 30 + 50 = 210 + 80 + 60 = 350).

The number of people born in Country A and living in Country A (blue field) decreases from 270 in 2005 to 210 in 2010. The number of people born in A and living in Country B (green field) increases from 30 to 80 and the number of people living in Country C (orange field) also increases from 50 to 60.
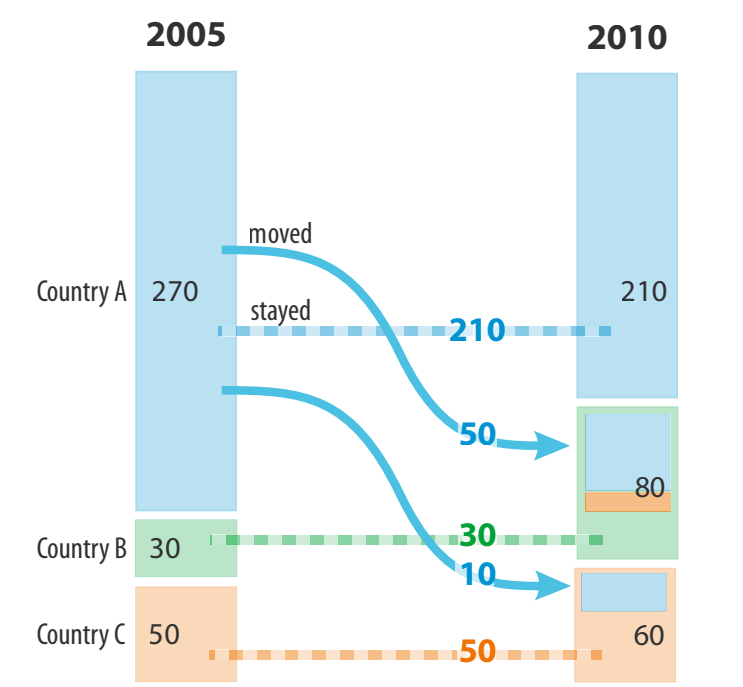
We estimate the minimum number of migrant flows required to match the differences in the stocks of people born in Country A. In doing so, we set the number of "stayers", those who remain in their country of residence between 2005 and 2010 as the maximum possible number. In this simplified example, 210 people born in A stay in A, 30 stay in B and 50 stay in C. This assumption generates 50 moves from Country A to Country B and 10 moves from Country A to Country C, whilst maintaining the observed stocks in 2005 and 2010. This estimation procedure is replicated simultaneously for all 196 countries to estimate birthplace-specific flow tables, resulting in a comparable set of global migration flow estimates.

Alterations are made to the original migrant stock counts to control for births and deaths during the period, using standard demographic procedures. These alterations allow our country-specific net migration flows to closely match the net migration flows published by the United Nations.

Further reading:

Abel, Guy J. 2013. Estimating global migration flow tables using place of birth data. Demographic Research 28 (18): 505-546.

Fig. 1: Hypothetical location of people born in Country A

Why estimates and UN flow data are incomparable

Official international migration data collected by national statistics institutes, and collated by Eurostat and the United Nations, are not directly comparable due to differences in definitions, measurements and data collection procedures. In contrast, our estimates of migration flows between two sequential migrant stock tables capture the number of people who permanently change their country of residence over five year periods.

It is tempting to evaluate our estimates against official data by dividing our five-year flows by a factor of five to derive an annual number similar to that of official data. However, this is not a suitable comparison as the two measures capture different types of moves.

Annual flow data sourced from administrative records or national surveys capture every move during the reference period, providing the duration of stay exceeds 12 months (the time criterion differs across countries). Our five-year flow estimates capture migrants who changed their country of residence between mid-2005 and mid-2010. Figure 2 depicts the types of movements between three hypothetical countries that can be distinguished for people born in Country A. First, initial moves (a) involve people moving out of their country of birth; second, return moves (b) toward their country of birth; and third, onward moves (c) to a third country.

Our estimates do not distinguish return moves (d) from those who stayed in Country C. They also cannot identify multiple moves (e) during the interval, where only one transition over the length of the period is captured. Since the ratio between one-year and five-year migration numbers differs across countries, depending on how much circular and return movement occurs, there is no simple algebraic solution to comparing annual register data and our five-year transitions flows
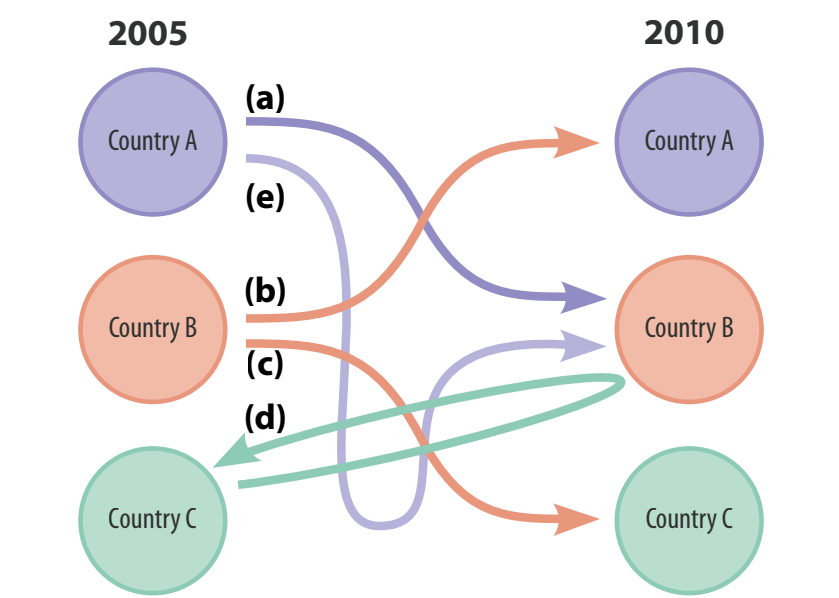

Fig. 2: Types of flows distinguished in our estimates using a hypothetical example for people born in Country A

Immigration (in), emigration (out) and net migration flows for 196 countries in 2005-10 (in 1,000s)

The estimates capture the number of people who permanently changed their country of residence over the five-year period 2005 to 2010 and thus reflect movements over a longer time period than currently published statistics.

Country	In	Out	Net	Country	In	Out	Net	Country	In	Out	Net	Country	In	Out	Net	Country	In	Out	Net
EUROPE				Ukraine	386	426	-41	Venezuela	111	71	40	Nigeria	150	435	-286	Kyrgyzstan	0	132	-132
Albania	31	79	-48	United Kingdom	1722	700	1021	Virgin Islands	0	3	-4	Republic of Congo	50	0	50	Laos	0	75	-75
Austria	214	54	160	**AMERICA**				**AFRICA**				Réunion	3	3	0	Lebanon	87	99	-13
Belarus	60	110	-51	Argentina	74	273	-200	Algeria	55	195	-140	Rwanda	62	47	15	Macao SAR	55	4	50
Belgium	215	15	200	Aruba	4	0	4	Angola	83	0	82	Sao Tome & Principe	0	7	-7	Malaysia	696	610	85
Bosnia & Herzegovina	20	30	-10	Bahamas	6	0	6	Benin	79	28	50	Senegal	19	151	-133	Maldives	0	0	-1
Bulgaria	34	84	-50	Barbados	2	2	-1	Botswana	38	19	18	Sierra Leone	75	14	60	Mongolia	0	15	-15
Croatia	37	27	10	Belize	6	7	-1	Burkina Faso	263	387	-124	Somalia	0	299	-300	Myanmar	0	498	-499
Cyprus	45	1	44	Bolivia	28	193	-165	Burundi	370	0	370	South Africa	799	98	701	Nepal	81	179	-99
Czech Republic	241	0	240	Brazil	5	506	-502	Cameroon	35	53	-18	Sudan	199	62	137	North Korea	19	22	-3
Denmark	109	19	90	Canada	1392	293	1098	Cape Verde	3	20	-18	Swaziland	11	17	-6	Oman	184	31	153
Estonia	4	4	0	Chile	101	71	30	Central African Republic	39	34	5	Tanzania	67	366	-299	Pakistan	33	2022	-1990
Finland	73	0	72	Colombia	20	139	-120	Chad	74	149	-75	Togo	12	17	-5	Palestine	0	89	-90
France	752	251	500	Costa Rica	119	43	75	Comoros	0	10	-10	Tunisia	9	28	-20	Philippines	30	1260	-1230
Germany	1330	780	550	Cuba	0	190	-191	Côte d'Ivoire	206	565	-359	Uganda	12	146	-134	Qatar	862	5	857
Greece	212	58	154	Dominican Republic	65	205	-140	Congo DR	72	94	-22	Western Sahara	47	0	47	Saudi Arabia	1287	230	1056
Hungary	84	9	75	Ecuador	139	259	-120	Djibouti	2	2	0	Zambia	42	126	-85	Singapore	721	0	721
Iceland	13	2	10	El Salvador	3	295	-292	Egypt	50	393	-343	Zimbabwe	0	899	-900	South Korea	80	110	-30
Ireland	167	67	100	French Guiana	9	3	6	Equatorial Guinea	20	0	20	**ASIA**				Sri Lanka	1	250	-250
Italy	2007	8	1999	Grenada	0	5	-5	Eritrea	56	0	55	Afghanistan	13	392	-379	Syria	397	452	-55
Latvia	0	10	-10	Guadeloupe	2	5	-4	Ethiopia	0	296	-297	Armenia	19	94	-75	Tajikistan	0	296	-296
Lithuania	0	36	-36	Guatemala	5	205	-200	Gabon	35	30	5	Azerbaijan	67	13	53	Thailand	508	15	493
Luxembourg	43	0	42	Guyana	3	43	-40	Gambia	25	38	-14	Bahrain	447	0	447	Turkmenistan	2	56	-55
Macedonia	18	16	2	Haiti	1	241	-240	Ghana	263	312	-50	Bangladesh	18	2918	-2900	United Arab Emirates	3077	0	3076
Malta	5	0	5	Honduras	1	101	-100	Guinea	3	302	-300	Bhutan	19	2	16	Uzbekistan	7	525	-519
Moldova	7	179	-172	Jamaica	2	102	-100	Guinea-Bissau	8	18	-10	Brunei	49	46	3	Vietnam	19	448	-430
Montenegro	18	20	-3	Martinique	2	4	-2	Kenya	80	268	-188	Cambodia	0	254	-255	Yemen	77	211	-134
Netherlands	297	247	50	Mexico	123	1926	-1803	Lesotho	1	21	-20	China	127	2021	-1895	**OCEANIA**			
Norway	171	0	171	Netherlands Antilles	11	3	8	Liberia	322	21	300	East Timor	0	49	-50	Australia	1164	39	1125
Poland	93	38	55	Nicaragua	0	200	-200	Libya	32	52	-21	Georgia	1	151	-150	Fiji	2	31	-29
Portugal	316	166	150	Panama	28	17	11	Madagascar	2	8	-6	Hong Kong SAR	332	156	176	French Polynesia	0	1	-1
Romania	42	142	-100	Paraguay	6	46	-40	Malawi	19	38	-20	India	709	3632	-2924	Guam	6	6	0
Russia	1409	273	1135	Peru	0	724	-725	Mali	16	116	-100	Indonesia	0	1276	-1277	Micronesia	0	8	-9
Serbia	175	175	0	Puerto Rico	1	146	-146	Mauritania	21	10	10	Iran	291	474	-184	New Caledonia	6	0	6
Slovakia	37	0	36	Saint Lucia	1	2	-1	Mauritius	10	10	0	Iraq	0	149	-149	New Zealand	247	182	65
Slovenia	24	2	22	Saint Vincent & Grenadines	0	5	-5	Mayotte	3	3	-1	Israel	364	90	273	Papua New Guinea	6	5	0
Spain	2412	162	2250	Suriname	1	6	-5	Morocco	2	676	-675	Japan	440	170	269	Samoa	1	16	-16
Sweden	318	53	265	Trinidad and Tobago	1	20	-20	Mozambique	119	138	-20	Jordan	380	177	203	Solomon Islands	0	0	0
Switzerland	306	123	182	United States	6391	1431	4959	Namibia	19	21	-2	Kazakhstan	343	335	7	Tonga	0	8	-9
Turkey	112	161	-49	Uruguay	3	53	-50	Niger	31	58	-27	Kuwait	400	123	277	Vanuatu	0	0	0