What Really is Brain Drain?
Location of Birth, Education and
Migration Dynamics of African Doctors

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Introduction

- Great progress made in the last decade on skilled migration data...
  - Emigration rate among the tertiary educated is 42% in Small Island Economies

- But we never clearly define "high skilled migration"
  - Movement of human capital from location of production to employment

Available Data Sources: Stocks

- Stocks:
  - United Nations: Unilateral stocks (World)
  - World Bank: 1960-2000, Bilateral Global matrix
  - OECD/World Bank 2010 Bilateral Stocks to OECD+
  - Brucker et al: 1975-2005, approx. 20 OECD destinations

- Flows:
  - UNPD, OECD, IMI: C2C global flows

A Global Assessment

- Artuç, Docquier, Ozden, Parsons (2013)
    - 190*190 matrix, 1990 and 2000, 2 skill levels
    - 1st attempt to examine truly global patterns
    - Foreign-born definition
    - Two education levels
    - Gender

- Develop 2-stage estimation procedure to impute missing data and to account for endogeneity bias

Introduction

- As a result, we are still far from answering the fundamental questions on the <u>impact</u> and <u>determinants</u> of high skilled migration or "brain drain"

  - How does this high emigration rate impact growth, poverty and critical service delivery in sending countries?

  - What does this high emigration rate imply in terms of fiscal resource constraints in education and appropriate human resource related policies?

Introduction

- Need <u>unified</u> data on <u>patterns of migration</u> in terms of location of birth, training and age of migration

    - Over 70% of the college educated Jamaicans in the United States emigrated before age 18

    - Causal data indicate another 10% were educated in other countries - United Kingdom and Canada

Motivation

Dilip Ratha
Born: India
BA: India
PhD: India
Employment: USA

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Kaushik Basu
Born: India
BA: India
PhD: UK
Employment: USA

Question

We have some idea about location of birth, training and age of migration separately but,

NOT JOINTLY!!!

Case: Physicians in the US

from Sub-Saharan and North Africa

Data

Combine two data sources:

American Medical Association (AMA):

- <u>complete</u> administrative data on <u>ALL</u> physicians in the US
- location of training, personal data and <u>incomplete</u> place of birth

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American Community Survey (ACS)

- Annual census – nationally representative <u>sample</u>
- Personal data, place of birth, age of migration but <u>no place of training</u>

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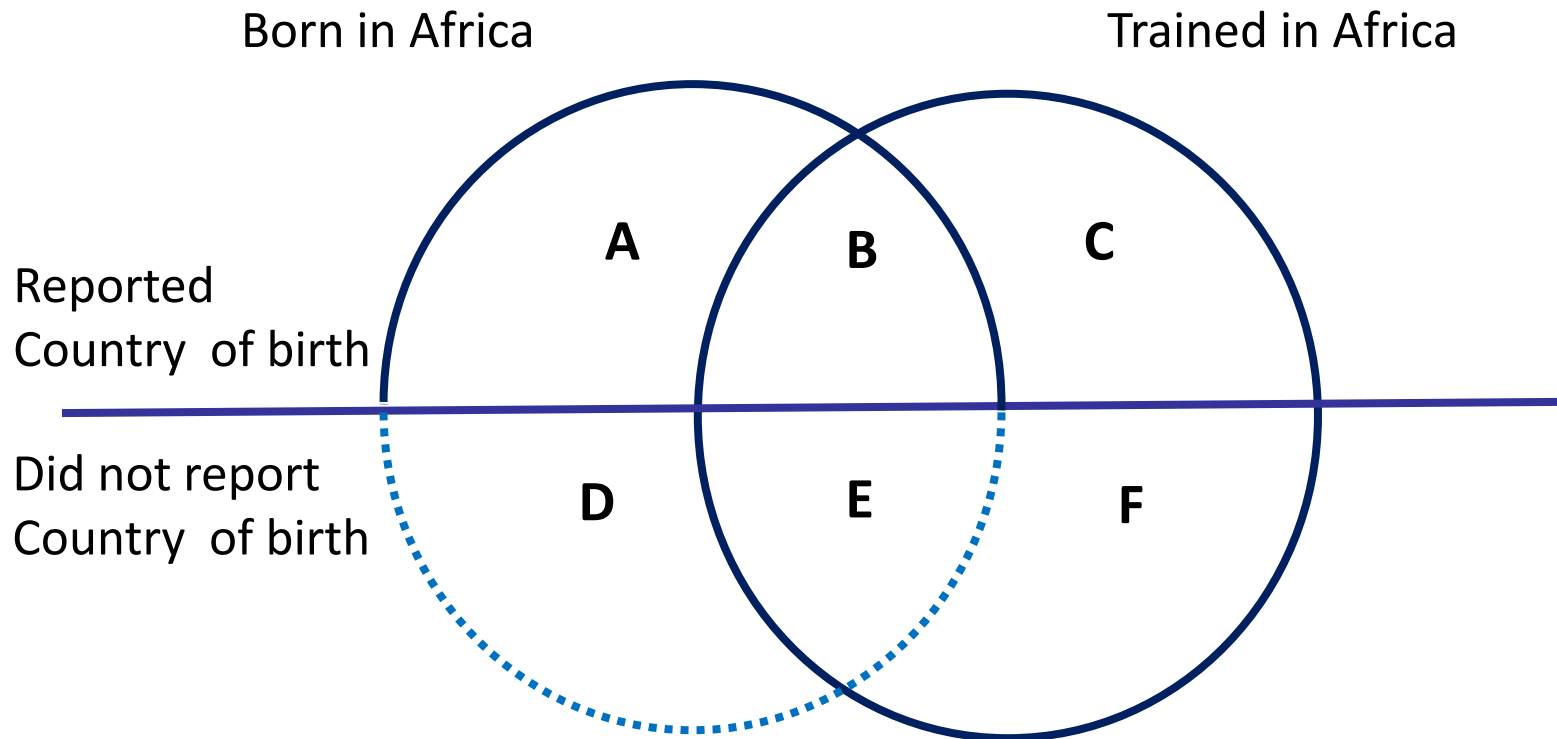
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Divide Africa into 13 regions + world into 6 regions
- (Egypt, Nigeria, South Africa, Ghana, Ethiopia, ...)
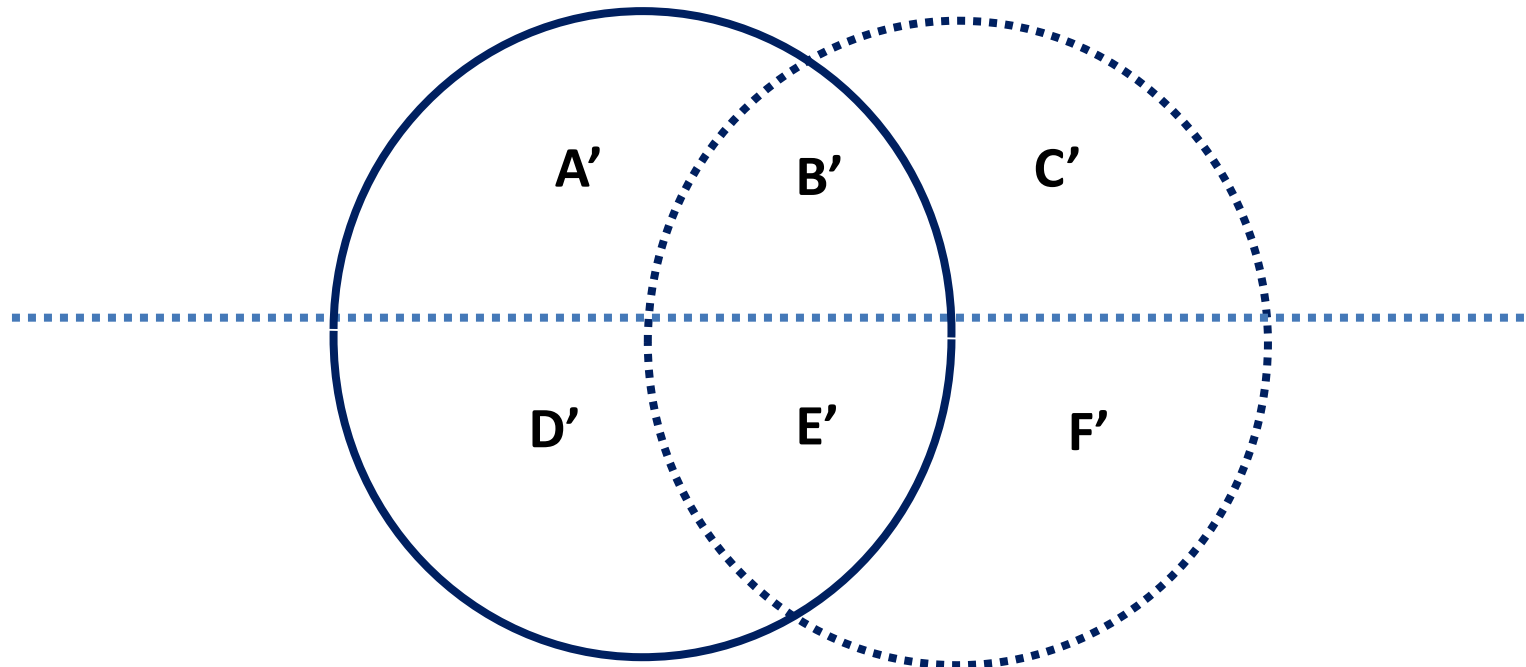- (US, English speaking OECD, Europe, ...)

Data – AMA File

Born in Africa   Trained in Africa

Reported
Country of birth

A   **B**   **C**

Did not report
Country of birth

D   **E**   **F**

Data – Census File

Estimation – Step 1
# Determine place of birth

- First, from AMA data, determine probability of being in born in country "b" if educated in country "e" for each doctor "i"

- Use information from B + C to determine $p_i(b,e)$ for those in region E + F

Born in Africa   Trained in Africa

Reported   A   B   C

Did not report   D   E   F

AMA
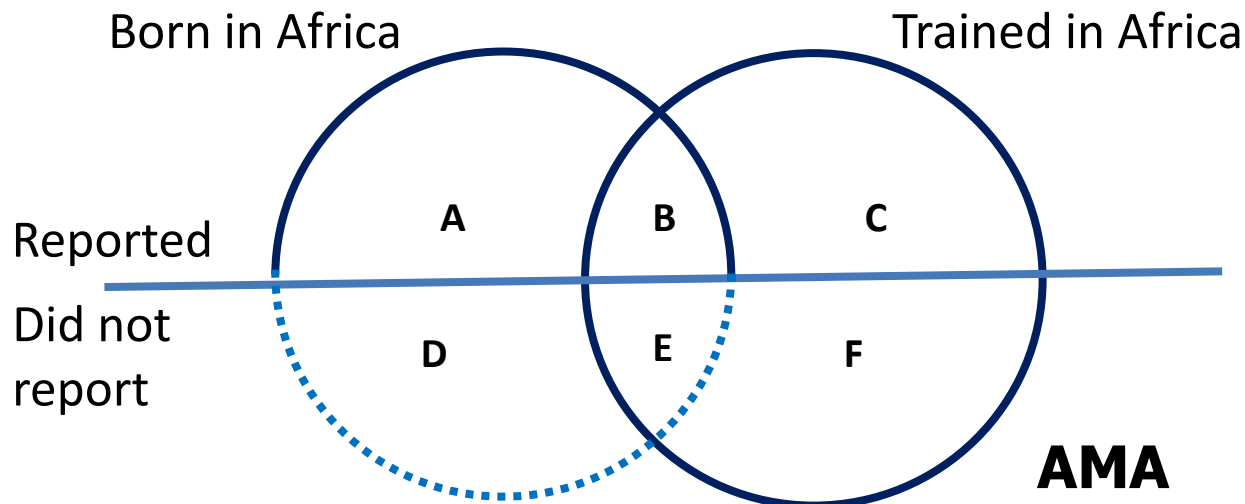
Estimation - Step 2
# Determine place of Training

- PROBLEM MORE SEVERE!
- Second, match ACS data with AMA data, to determine probability of being in trained in "b" if born in "e" for each doctor "i"
- Use information from A + B to determine $p*_i(b,e)$ for those in region A' + B' + C' + D'

Born in Africa   Trained in Africa

A   B   C

D   E   F

AMA

Born in Africa   Trained in Africa

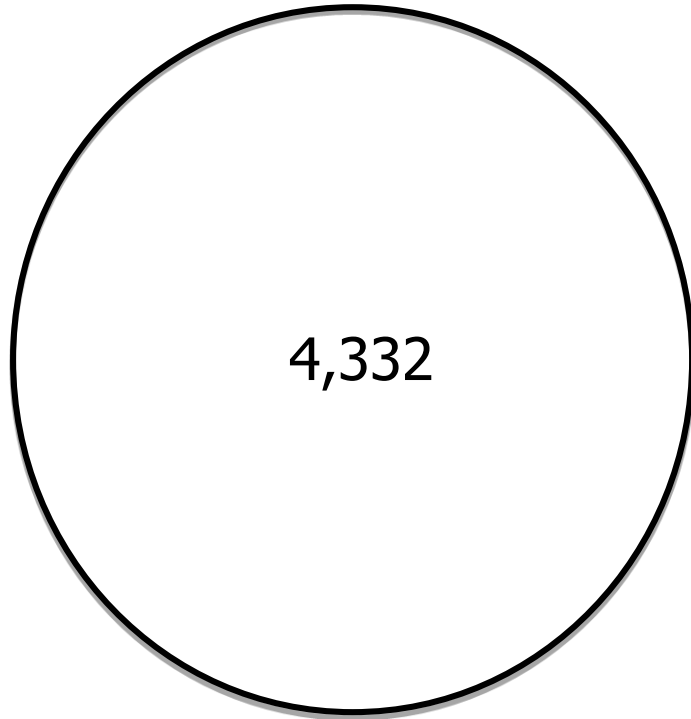A'   B'   C'

D'   E'   F'

ACS
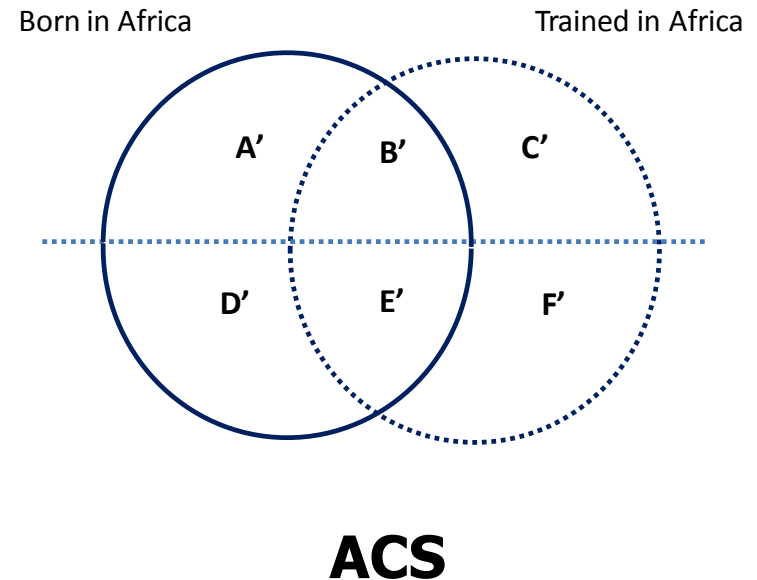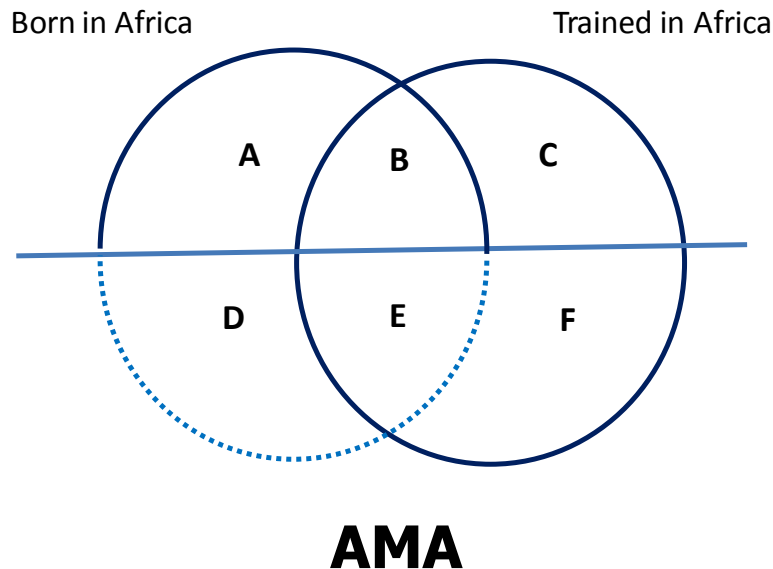
Estimation - Step 3
Determine Age of Migration

- We have age of migration from ACS only for those in A'+B'+D'+E' So drop from analysis those trained in but NOT born in Africa

- We have $p*_i(b,e)$ for A' + D' – use age of migration directly from ACS

- We have $p_i(b,e)$ for B + E – match them to ACS to determine $q(a,p,e)$ – probability of migrating at age "a" if born in "b" and educated in "e"

Born in Africa   Trained in Africa

AMA

Born in Africa   Trained in Africa

ACS
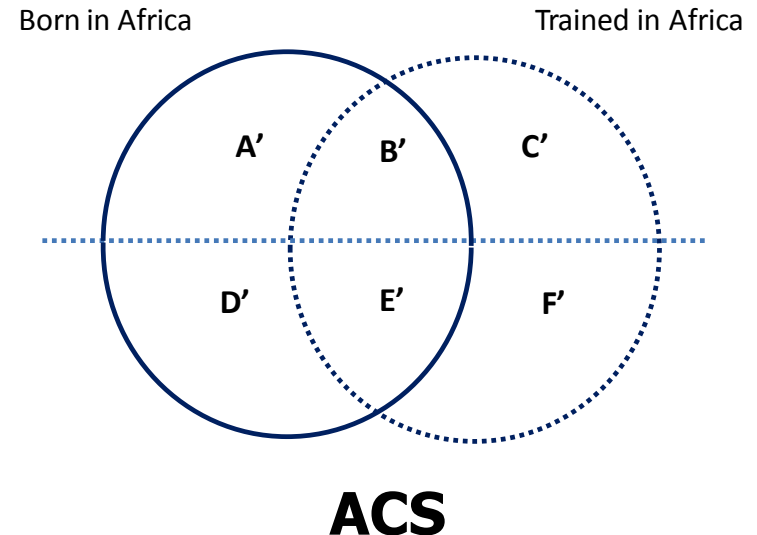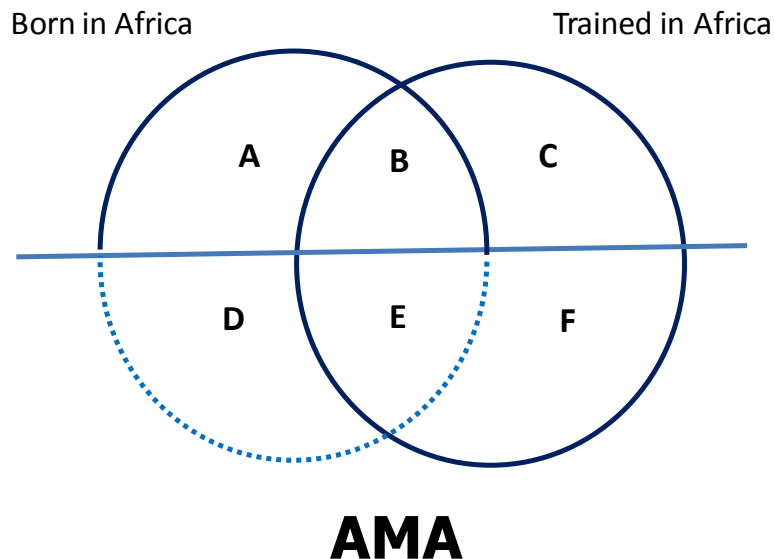
Egyptian Doctors in the US

BORN IN EGYPT
ACS

TRAINED IN EGYPT
AMA

4,332

4,062

Egyptian Doctors in the US

BORN IN EGYPT

TRAINED IN EGYPT

804

3,528

534

(16%)

(73%)

(11%)
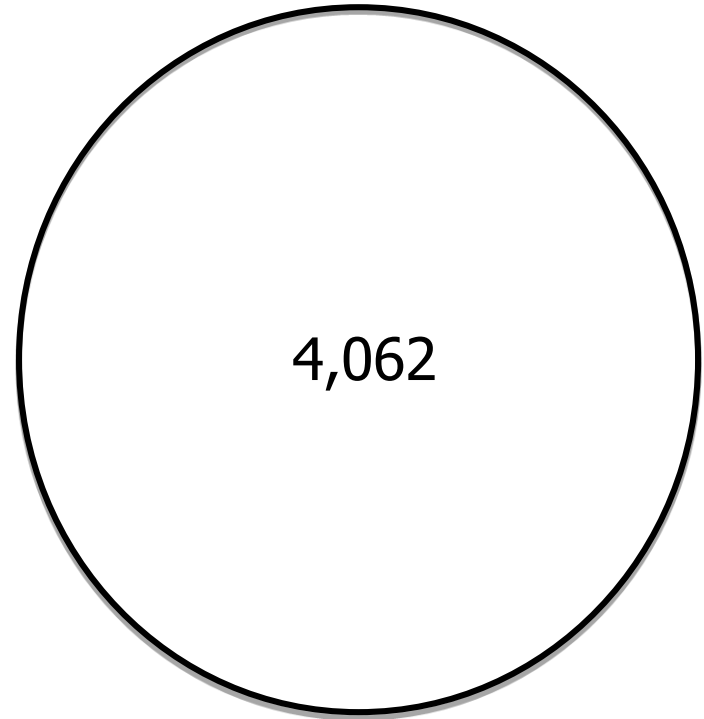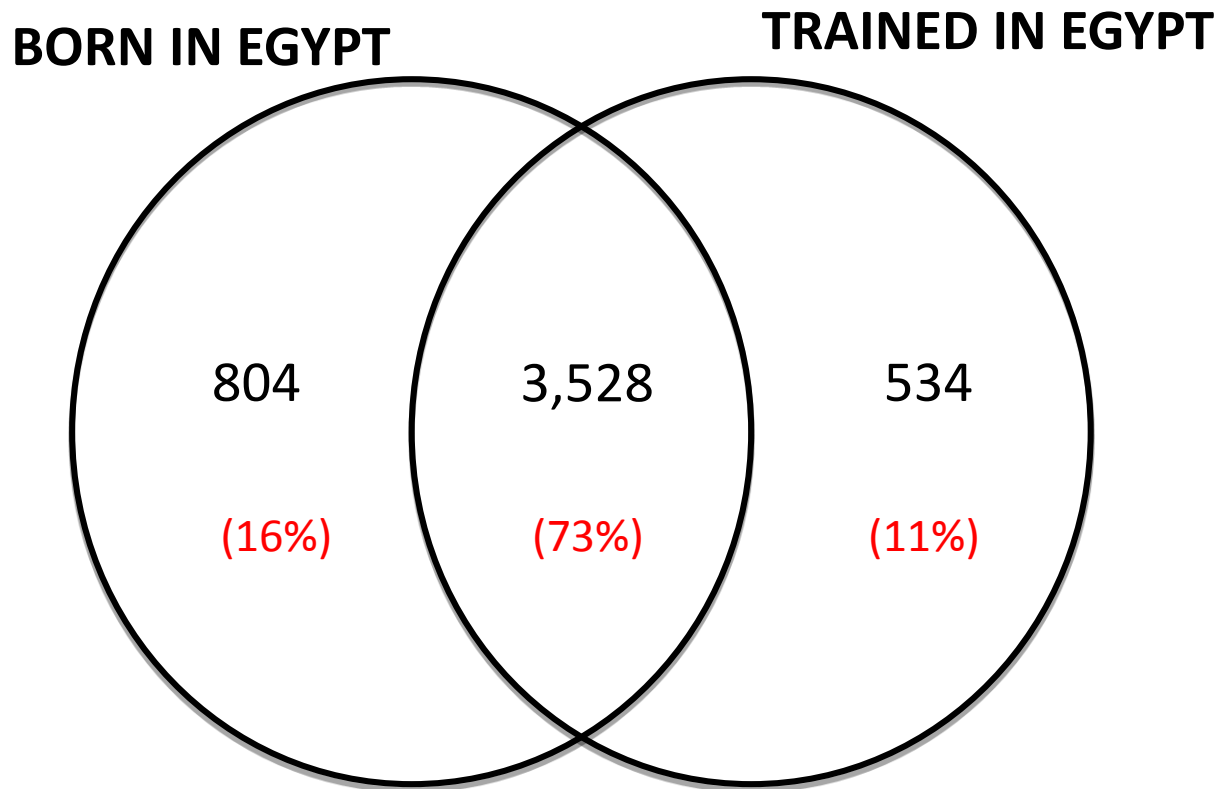
TOTAL NUMBER OF "EGYPTIAN" DOCTORS IN THE US: 4,866

Egyptian Doctors in the US

BORN IN EGYPT   **TRAINED IN EGYPT**

Trained in another African Country → 32

Born in another African Country → 44

Born in the United States → 125

Trained in the United States → 637

3,528

Trained in the rest of the world → 133

Born in the rest of the world ← 365

16% of total   **73% of total**   **11% of total**

TOTAL: 4,866
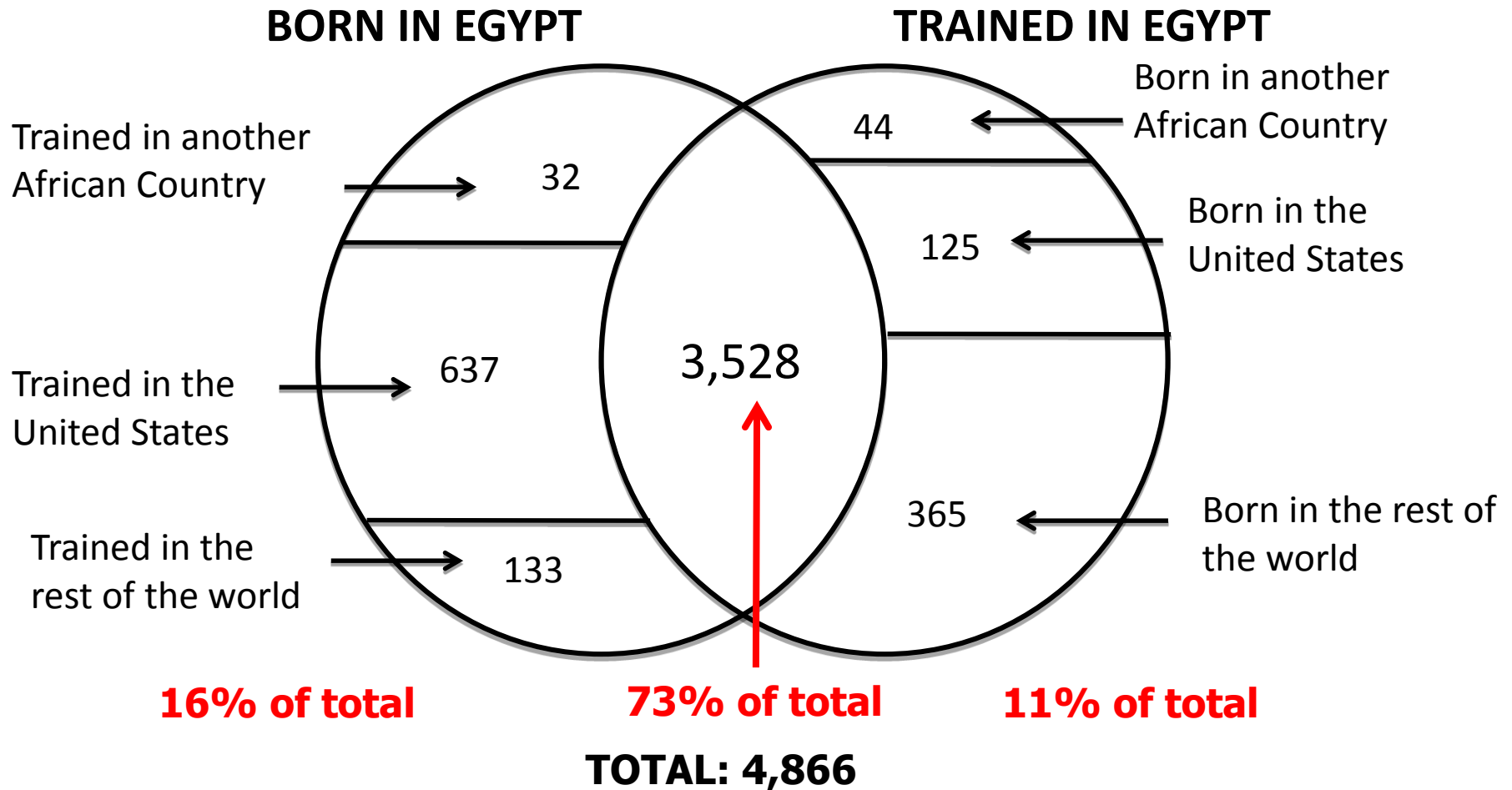
North African Doctors in the US (excluding Egyptians)

BORN IN NORTH AFRICA   **TRAINED IN NORTH AFRICA**

Trained in another African Country → 15

28 ← Born in another African Country

Trained in the United States → 249

300

58 ← Born in the United States

Trained in the rest of the world → 143

48 ← Born in the rest of the world
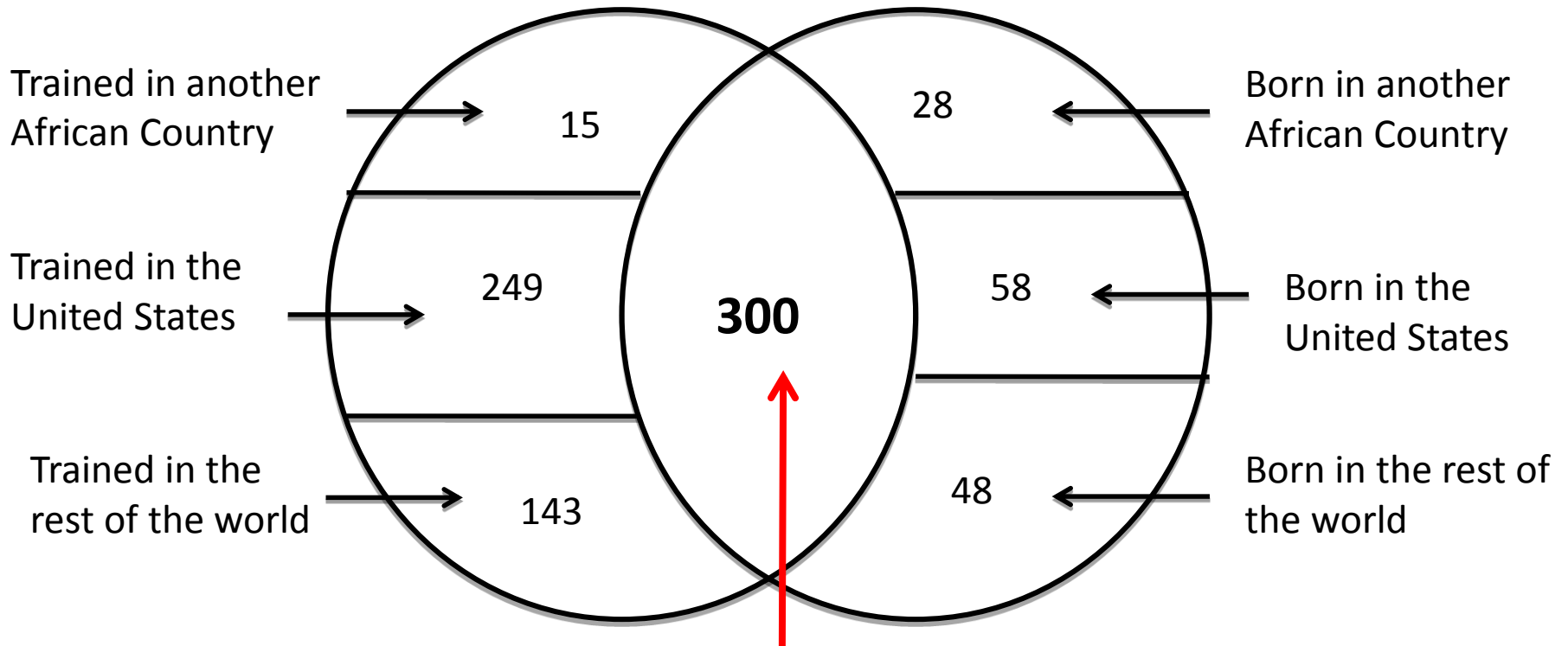
48% of total   **36% of total**   **16% of total**

TOTAL: 841

South African Doctors in the US

BORN IN SOUTH AFRICA   **TRAINED IN SOUTH AFRICA**

Trained in another African Country → 5

Born in another African Country ← 181

Trained in the United States → 1,002

818

Born in the United States ← 92

Trained in the rest of the world → 290

Born in the rest of the world ← 254

49% of total   **31% of total**   **20% of total**

TOTAL: 2,642
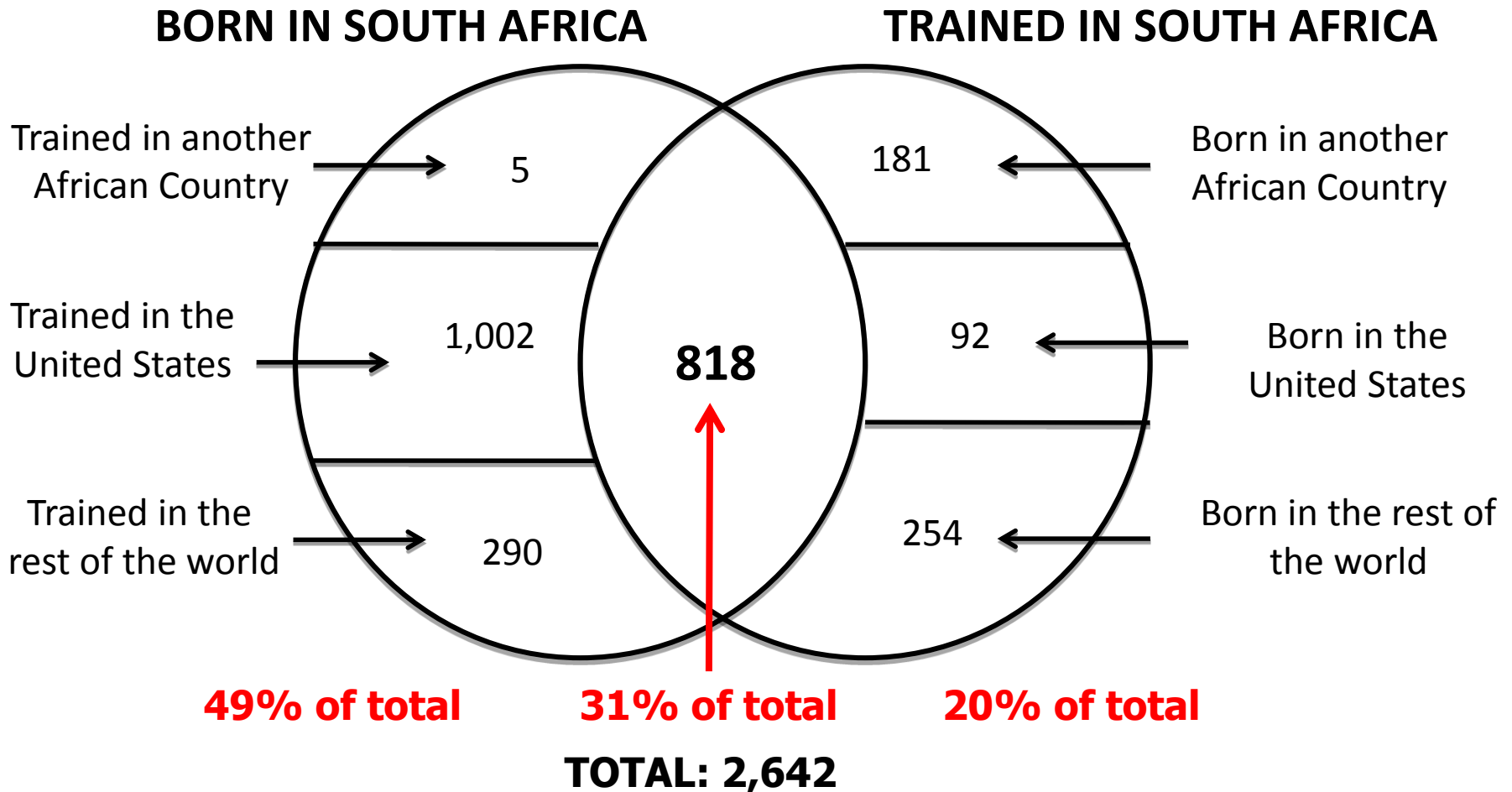
Location of Birth vs. Education

LOCATION OF BIRTH	EGYPT	ETHIOPIA	GHANA	KENYA	LIBERIA	NIGERIA	OTHER EAST AFRICA	OTHER NORTH AFRICA	CENTRAL SOUTHERN AFRICA	SOUTH AFRICA	SUDAN	UGANDA	ZIMBABWE	CARIBBEAN	ENGLISH SPEAKING	EUROPE	REST OF WORLD	SOUTH ASIA	UNITED STATES	TOTAL
EGYPT	3,528	2	0	0	0	0	2	23	0	0	6	0	0	48	16	31	36	2	637	4,332
ETHIOPIA	4	510	0	1	0	0	0	3	0	0	1	2	0	62	10	115	9	25	577	1,320
GHANA	0	0	672	0	1	26	2	0	0	0	0	0	0	46	4	53	24	4	351	1,183
KENYA	3	0	2	169	0	0	3	0	0	10	0	6	2	23	72	7	6	135	380	819
LIBERIA	2	0	0	0	37	0	0	2	0	0	0	0	0	15	0	40	31	28	251	405
NIGERIA	2	0	0	0	0	2,476	1	0	1	0	0	2	0	145	16	168	19	225	1,235	4,290
OTHER EAST AFRICA	0	0	0	2	0	7	55	0	6	36	0	2	27	80	63	45	10	164	639	1,135
OTHER NORTH AFRICA	14	0	0	0	0	0	0	300	1	0	0	0	0	18	17	28	47	32	249	708
WEST, CENTRAL, SOUTH	2	0	4	0	5	47	4	0	87	22	0	0	0	109	20	144	35	8	381	868
SOUTH AFRICA	1	0	0	0	2	0	0	0	0	818	0	2	0	37	76	33	113	32	1,002	2,115
SUDAN	16	0	0	0	0	0	0	0	0	0	307	0	0	4	2	11	7	3	23	374
UGANDA	0	2	0	0	0	0	10	0	0	0	0	100	0	3	34	15	2	91	81	339
ZIMBABWE	0	0	0	0	0	0	1	0	0	113	0	0	52	0	10	6	0	2	194	378
CARIBBEAN	0	0	0	0	0	0	0	2	5	0	0	0	0							6
ENGLISH SPEAKING	13	0	7	0	0	127	11	5	0	69	0	0	5							237
EUROPE	14	2	6	0	0	134	1	6	0	16	3	0	0							182
REST OF WORLD	306	0	3	0	0	30	1	27	0	159	0	10	12							548
SOUTH ASIA	33	0	2	1	0	131	34	9	0	11	0	4	1							225
UNITED STATES	125	2	0	0	14	195	8	58	0	92	6	25	7							532
TOTAL	4,062	519	696	173	59	3,175	134	433	100	1,345	324	151	106	590	341	697	339	753	6,000	19,997

African Doctors in the US

BORN IN AFRICA   **TRAINED IN AFRICA**
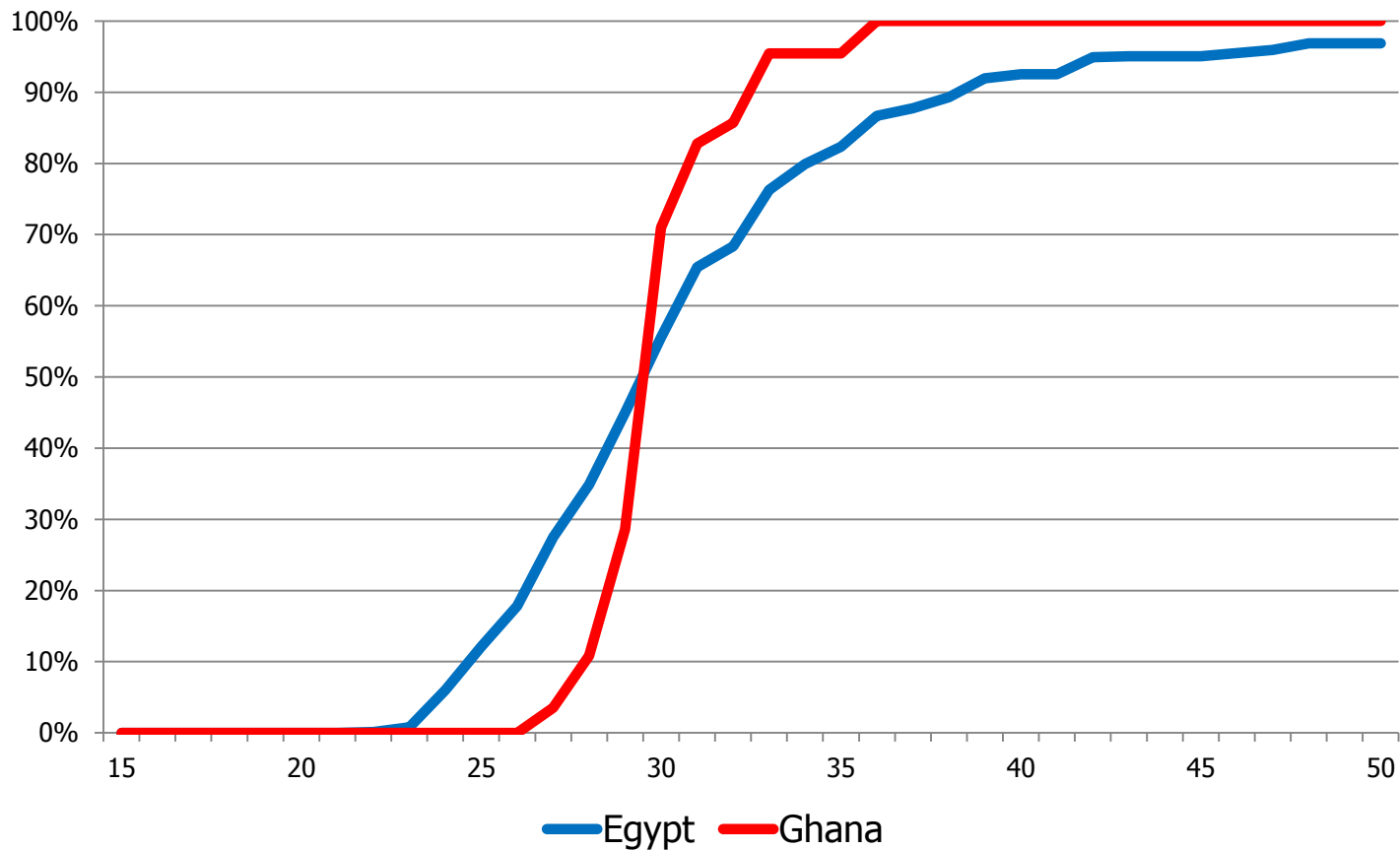
43.6%   47.7%   8.7%
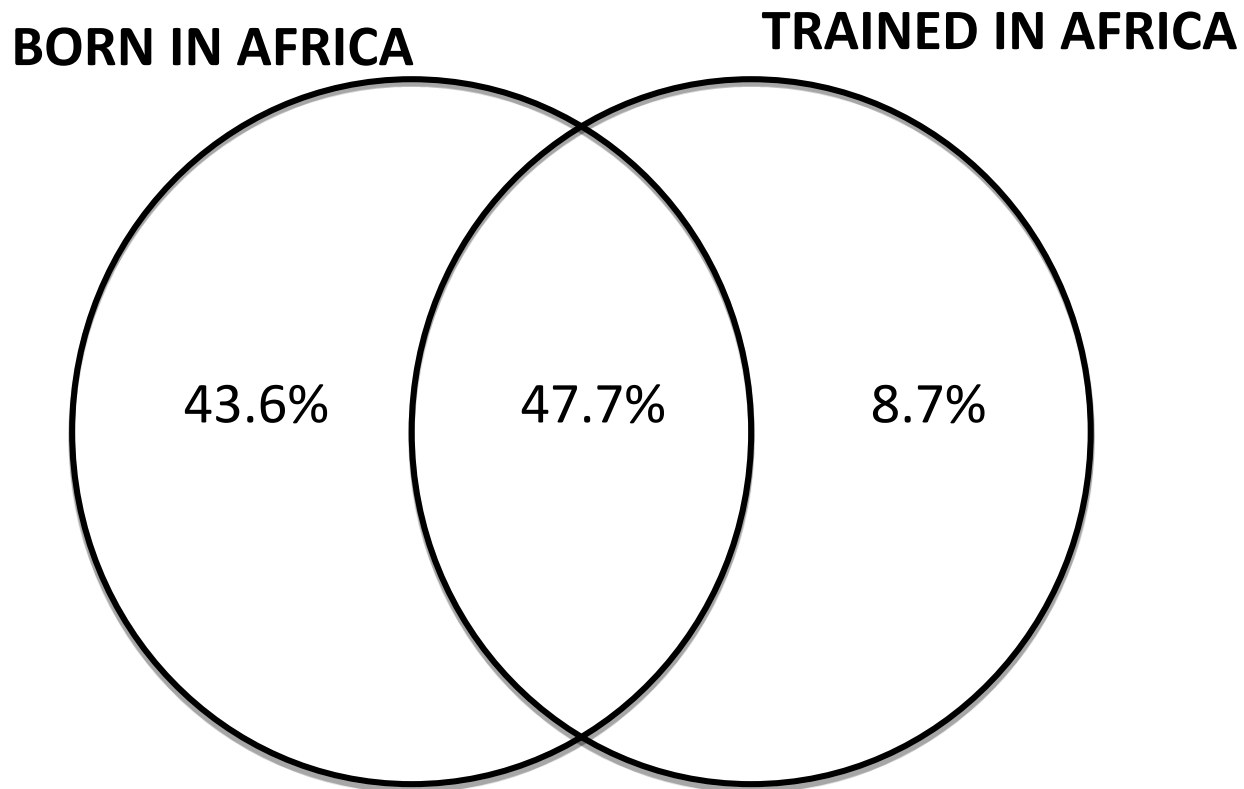
TOTAL NUMBER OF "AFRICA" DOCTORS IN THE US (around) 20 thousand
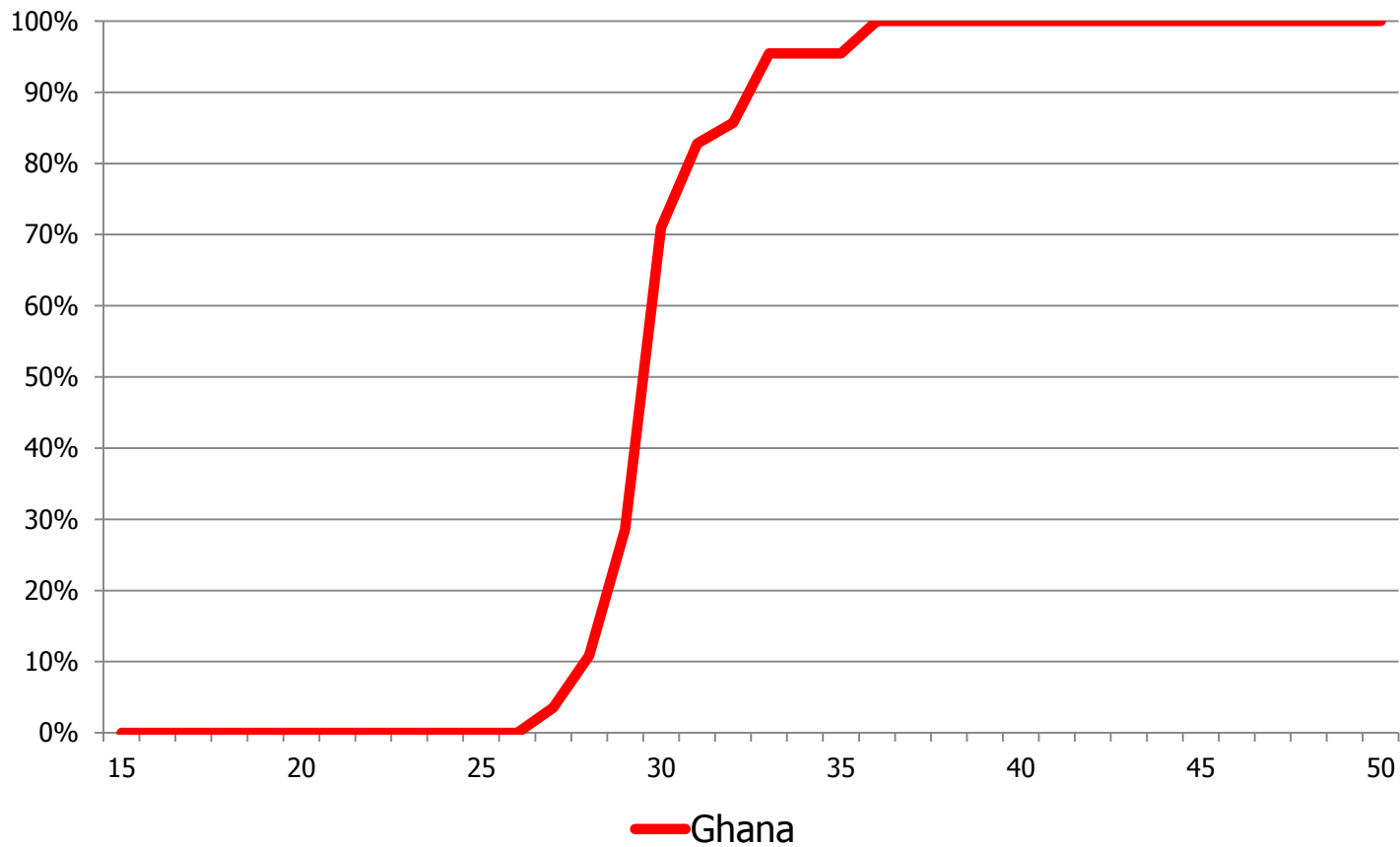
When do doctors migrate?
(Educated at home)

When do doctors migrate?
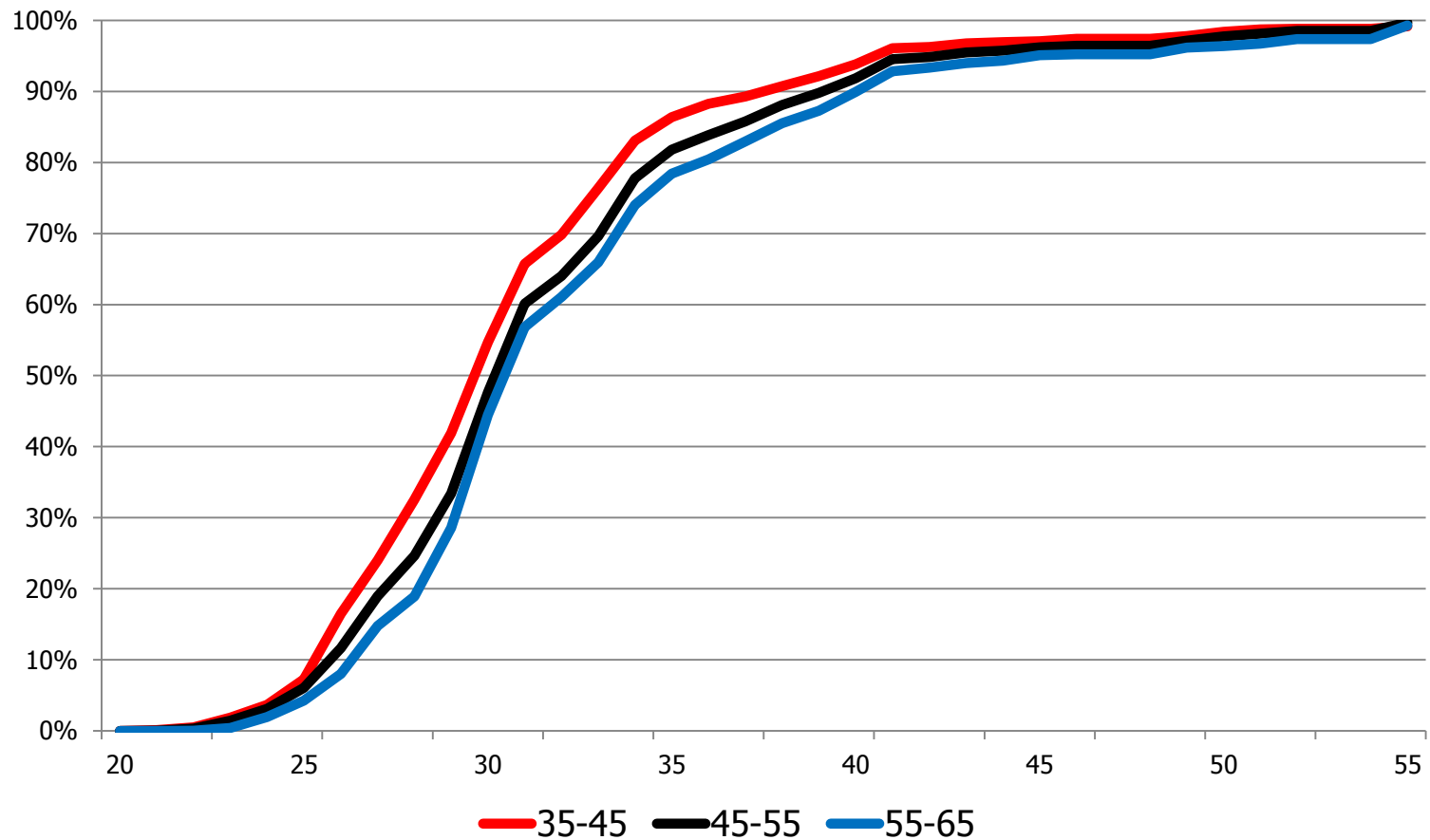# (Educated at home)

Egypt ▬▬ Ghana

When do doctors migrate?
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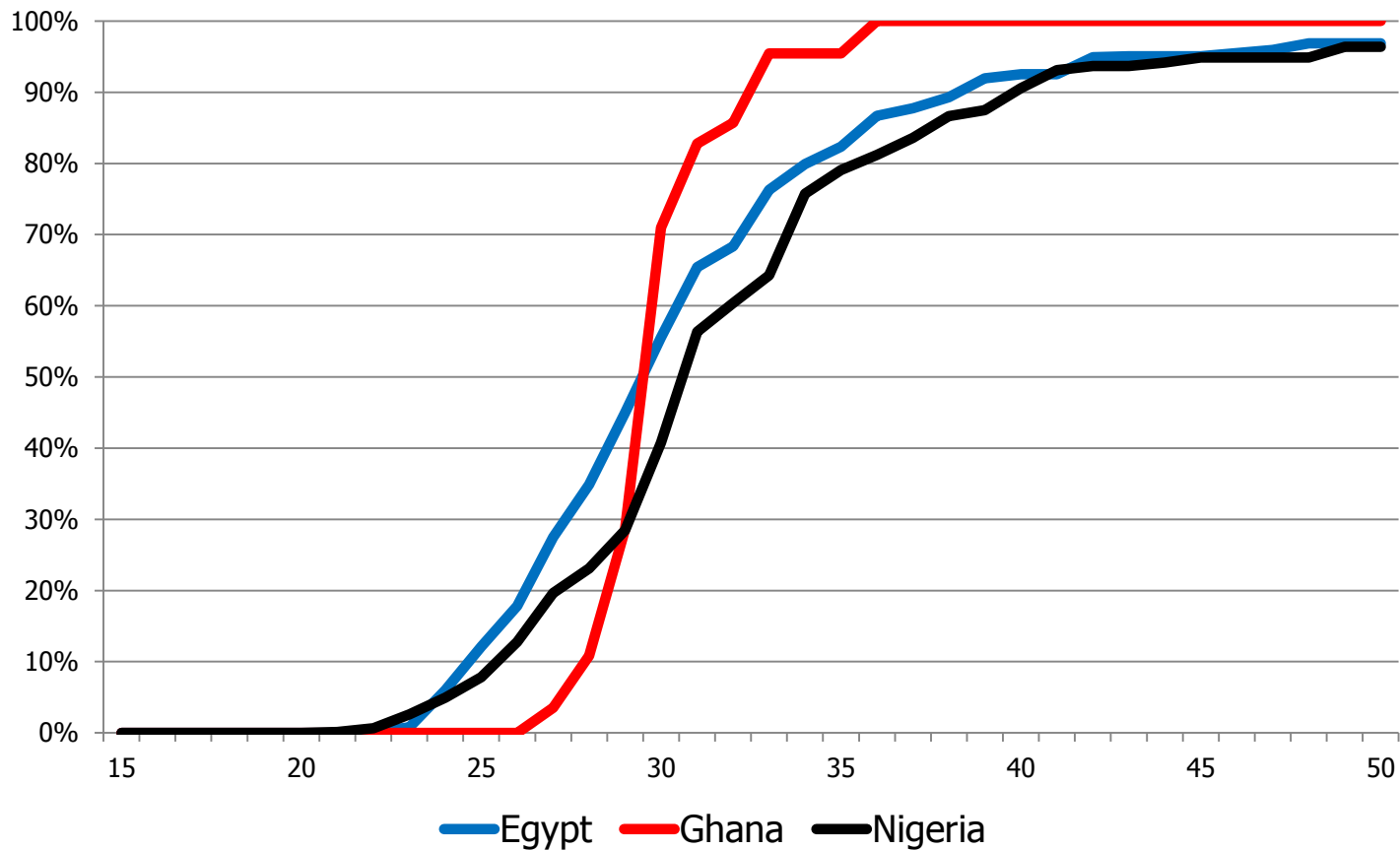
When do US-educated doctors migrate?
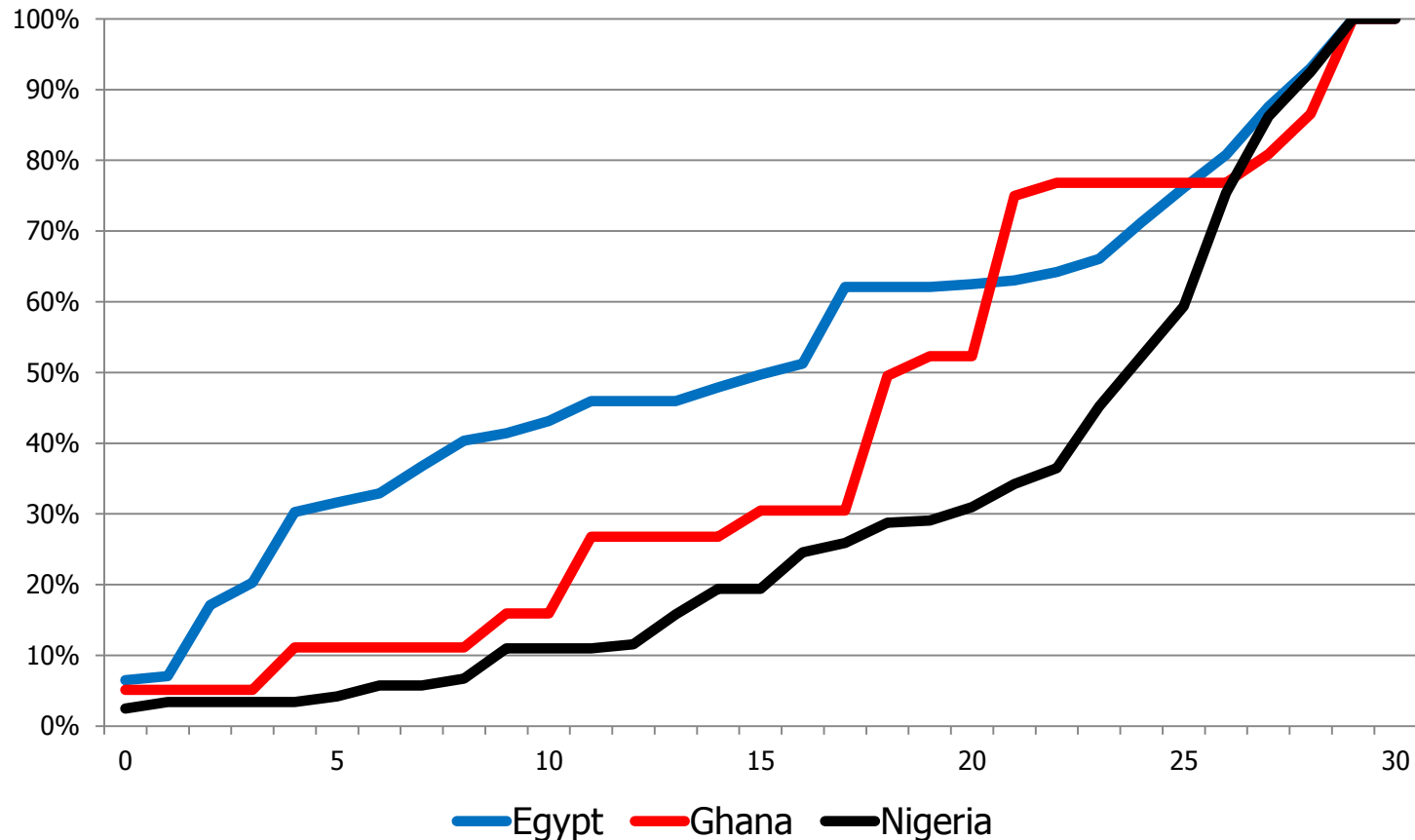
When do South African doctors migrate? (by cohort)

Why go through the trouble?

- We need to be very careful when we talk about skilled migration

    - There are 20,000 Sub-Saharan + North African doctors in the United States

    - 48% studied born and educated in Africa

    - 44% born in but studied outside Africa – 70% in the US

Why go through the trouble?

- We need to be very careful when we talk about skilled migration

  - Not every doctor trained in Egypt is actually Egyptian!!!

  - Almost 9% were born outside but were trained in Sub-Saharan + North African countries!!

Why go through the trouble?

- Global human capital markets are more complicated and integrated than we realize. The flows are <u>not uni-directional</u> but form a <u>multi-dimensional</u> <u>network</u>.

- Policymakers and research are BEHIND the curve!!

- Life would have been easier if AMA collected better data but I would not have much to talk about.

What is missing?

- How is education financed?
- At home (e.g, India)
  - Private or public?
  - If public, free or tuition?
- At location of employment (e.g, the US)
  - Private or public?
  - Which government (or source) financed it?
- At third location (e.g. the UK)
  - Private or public?
  - What is the exact source?

Thank You !!!

contact information

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