Where are we at with HSR into fragility?

A case study of the post-Ebola health system reconstruction effort in West Africa.

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Navigating fragility: lessons from health system research and practice

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Never again? Challenges in transforming the health workforce landscape in post-Ebola West Africa

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- After Ebola, 2014, a ‘sea change’ in support for the recovery of Liberia’s, Guinea’s and Sierra Leone’s health systems?

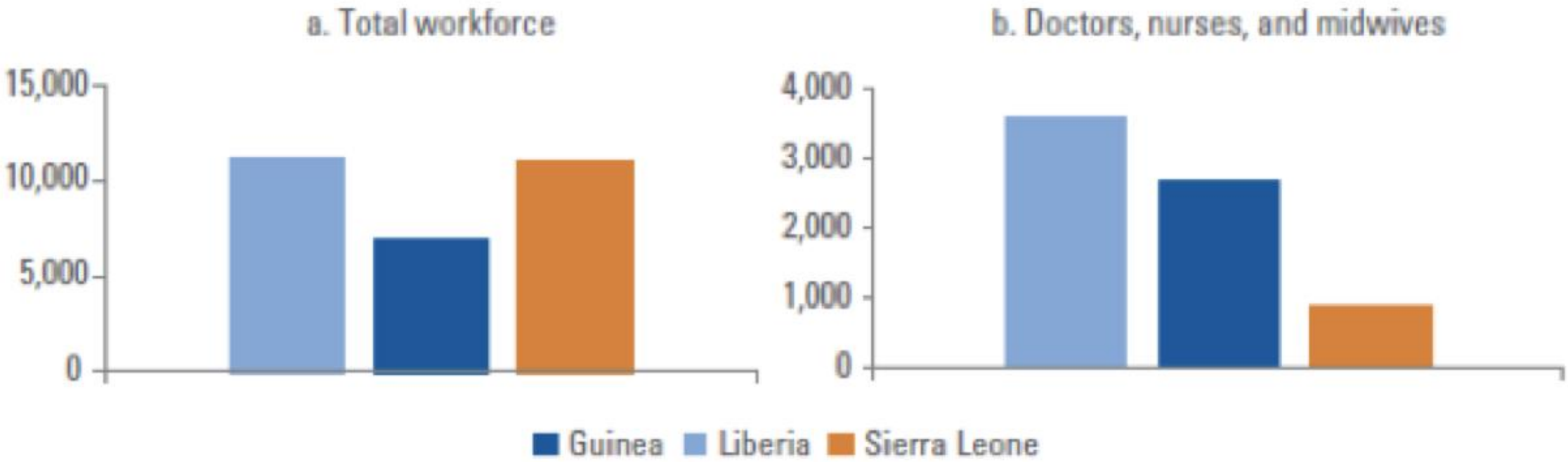
- *‘Now, with the support of an international community awakened to the global security threat, there is the chance to begin filling … gaps. Each* (of the three West African countries) *has introduced strategic plans calling for not just health system fixes, but improvements to all of the conditions that facilitated Ebola’s explosion’*
- (Andrew Green, Lancet, 2016)

- Key to any recovery will be investment to resolve the shortfalls in the health workforce in all three countries.
- Liberia: significant progress prior to outbreak. Emergency Human Resources Plan implemented 2007-2011, increased nursing and midwifery cadres in particular. But 2010, number of clinical health workers per 1000 population only 1.3. Little progress in relation to geographical distribution of staff (Varpilah et al., 2011)
- Sierra Leone: Clinical health workforce 0.2 per 1000 population in 2009 – one of heaviest urban concentrations globally (MacKinnon et al., 2012)
- Guinea: less than half health staff needed at beginning of 2014 projections contrasted growing need with declining workforce numbers particularly for nurses and midwives. Heavy concentration in Conakry (Jansen et al., 2014)
- Liberia – 4653 clinical health workers 2010; Sierra Leone – 2672 in 2008; Guinea – c.3000 in 2014 … cf. est. 418 health workers died in the three countries (Orgnization TWH, 2015)

- Aim: To document and assess the plans in each of the three countries to strengthen the health workforce situation as a component of the re-establishment and strengthening of the health systems that promised to follow the crisis.

- Method: health workforce analysis using public sector payroll data from 2015
- (Limitations: ‘ghost workers’; exclude private sector; 2015 data do not reflect results of subsequent payroll audits)

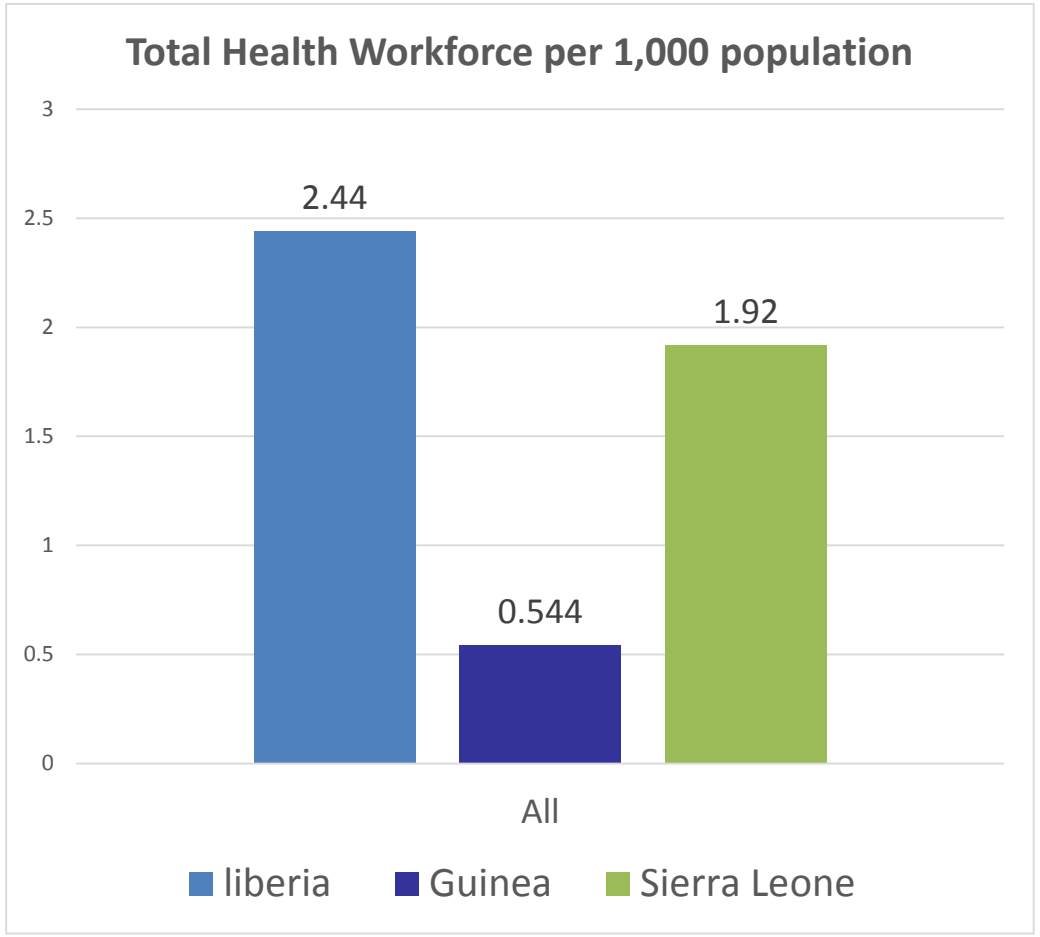
Number of Public Sector Health Workers, 2015

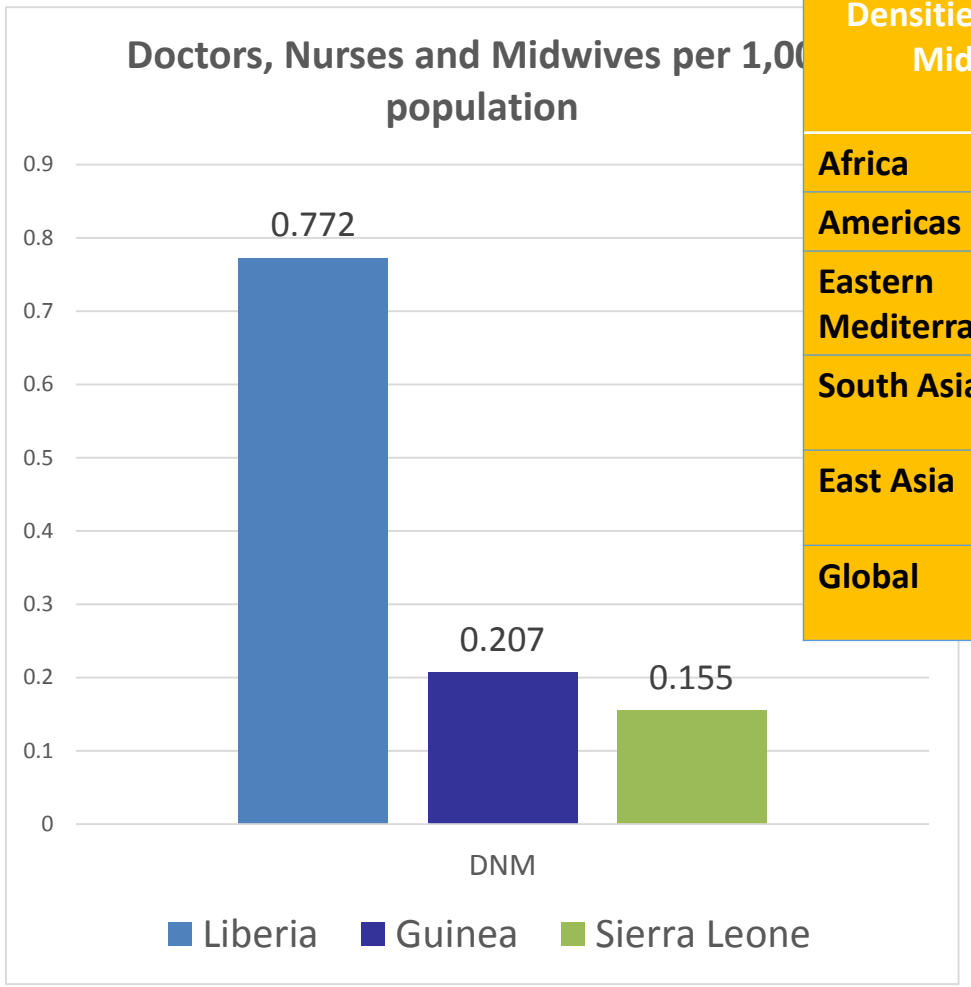


Source: 2015 government payrolls (public sector only).

Note: Total workforce includes all categories of staff employed in the public sector. *Doctors, nurses, and midwives* includes general medical practitioners, specialist medical practitioners, physician assistants, registered nurses and nurse professionals, and registered midwives and midwifery professionals (for example, certified midwives), and excludes nursing associate professionals such as nursing aides and assistants.

Current Health Workforce Stock - Densities



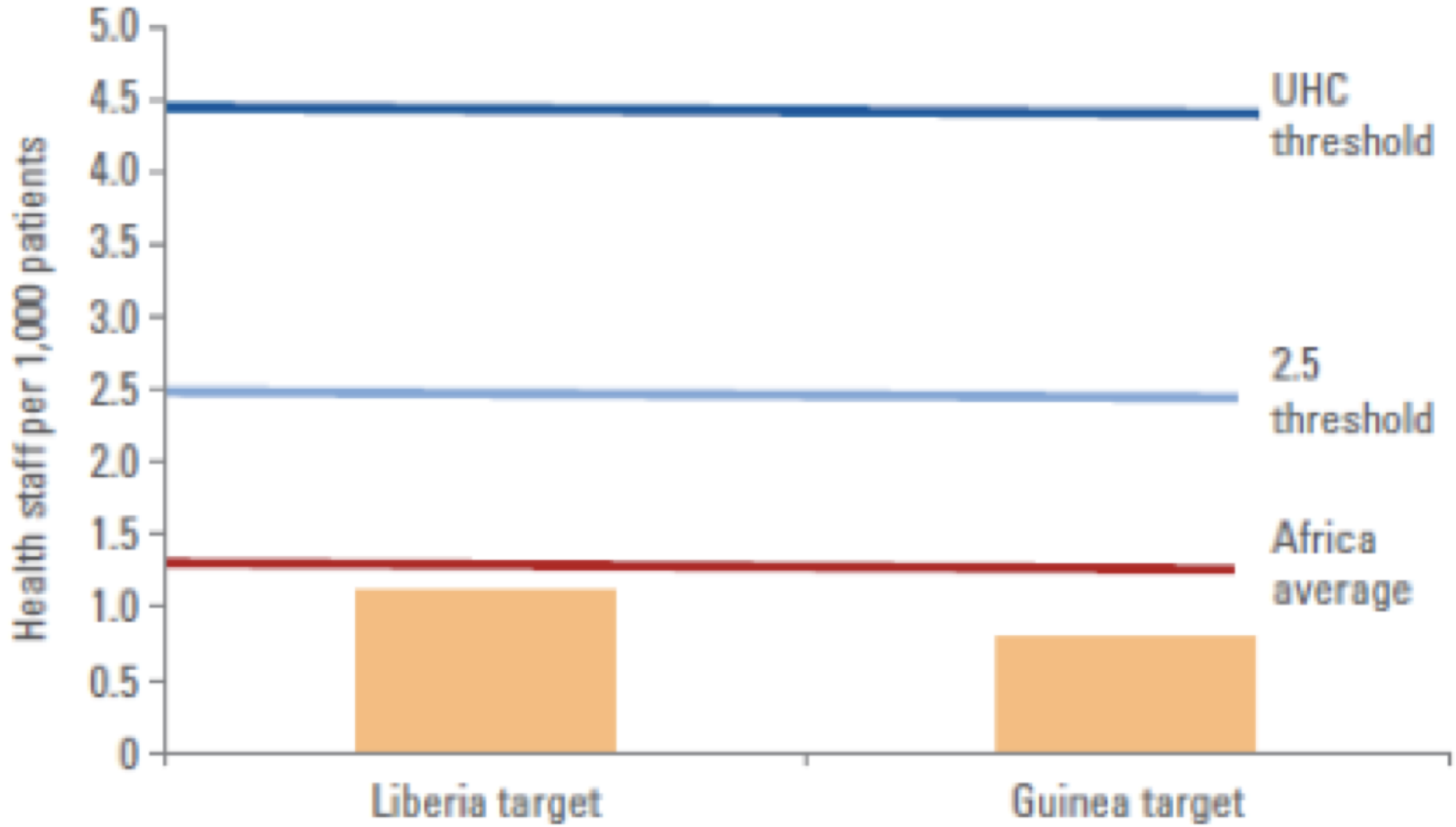


Regional Average Densities of Doctors, Nurses and Midwives per 1000 Pop	
Africa	**1.33**
Americas	**7.78**
Eastern Mediterranean	**2.43**
South Asia	**1.81**
East Asia	**4.37**
Global	**4.11**

- Investment Plan Reports: Liberia (1.4 doctors, nurses, midwives and physician assistants per 1000 population) and Guinea (0.26 doctors, 0.26 nurses and 0.26 midwives per 1000 population) specify density targets for health workforce scale up to be achieved by 2021 and 2024 respectively. Sierra Leone did not specify density targets

- Liberia: very large increase in doctors and midwives
- Guinea: large increases in doctors, nurses and midwives and very small increase in low-level cadres Sierra Leone: large increases in doctors and CHWs

Density Targets for Doctors, Nurses, and Midwives, Compared with International Thresholds



Note: UHC = universal health coverage.

Investment Plan Density Target Implications

Country	Implications	Doctors	Nurses	Midwives	Total
Liberia	Current stock	158	2,445	952	3,555
	Total stock needed to reach target density (1.12 per 1,000)a in 2021 (% annual growth)	274 (8.2%)	4,245 (8.2%)	1,653 (8.2%)	6,172
Guinea	Current stock	1,111	1,168	372	2,651
	Total stock needed to reach target density (0.78 per 1,000) in 2024 (% annual growth)	4,567 (15.2%)	4,801 (15.2%)	1,529 (15.2%)	10,897
Sierra Leone	Current stock	234	450	208	892
	Required for target density (0.78 per 1,000) in 2025 (% annual growth)	1,638 (19.4%)	3,151 (19.4%)	1,456 (19.4%)	6,245
	Required for target density (1.12 per 1,000) by 2025 (% annual growth)	2,352 (23.3%)	4,524 (23.3%)	2,091 (23.3%)	8,967 (23.3%)

Note: In each case it is assumed that the current staff ratios across the three cadres will not change, so the growth rates for each cadre are the same. Note that Liberia's investment plan target has been adjusted from 1.4 per 1000 to 1.12 per 1000 with the removal of physician assistants for the purpose of this analysis

- Relative to the existing plans requiring growth rates of 8.2 %, Liberia; 15.2% Guinea and 19.4-23.3% Sierra Leone, what would it take to meet at least the 2.5 JLI target density rates by 2020, 2025, and 2030?

Country	Growth rate of doctors, nurses, and midwives needed to reach 2.5 density target
Liberia	24.7% (2020); 14.5% (2025); 10.9% (2030)
Guinea	50.1% (2020); 26.7% (2025); 18.7% (2030)
Sierra Leone	65.2% (2020); 32.7% (2025); 22.2% (2030)

Percent

Scenario	Workforce attrition	Drop out of training	Employment rate
Baseline scenario	10	20	50
Alternate scenario	5	10	75

What graduate numbers are required?

Percent

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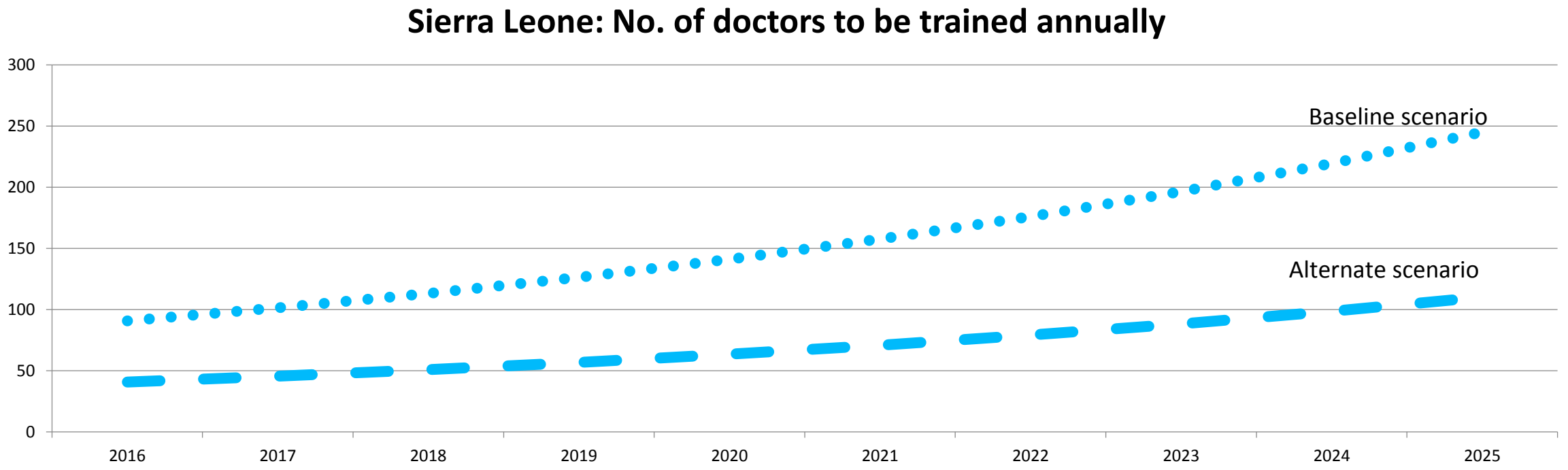
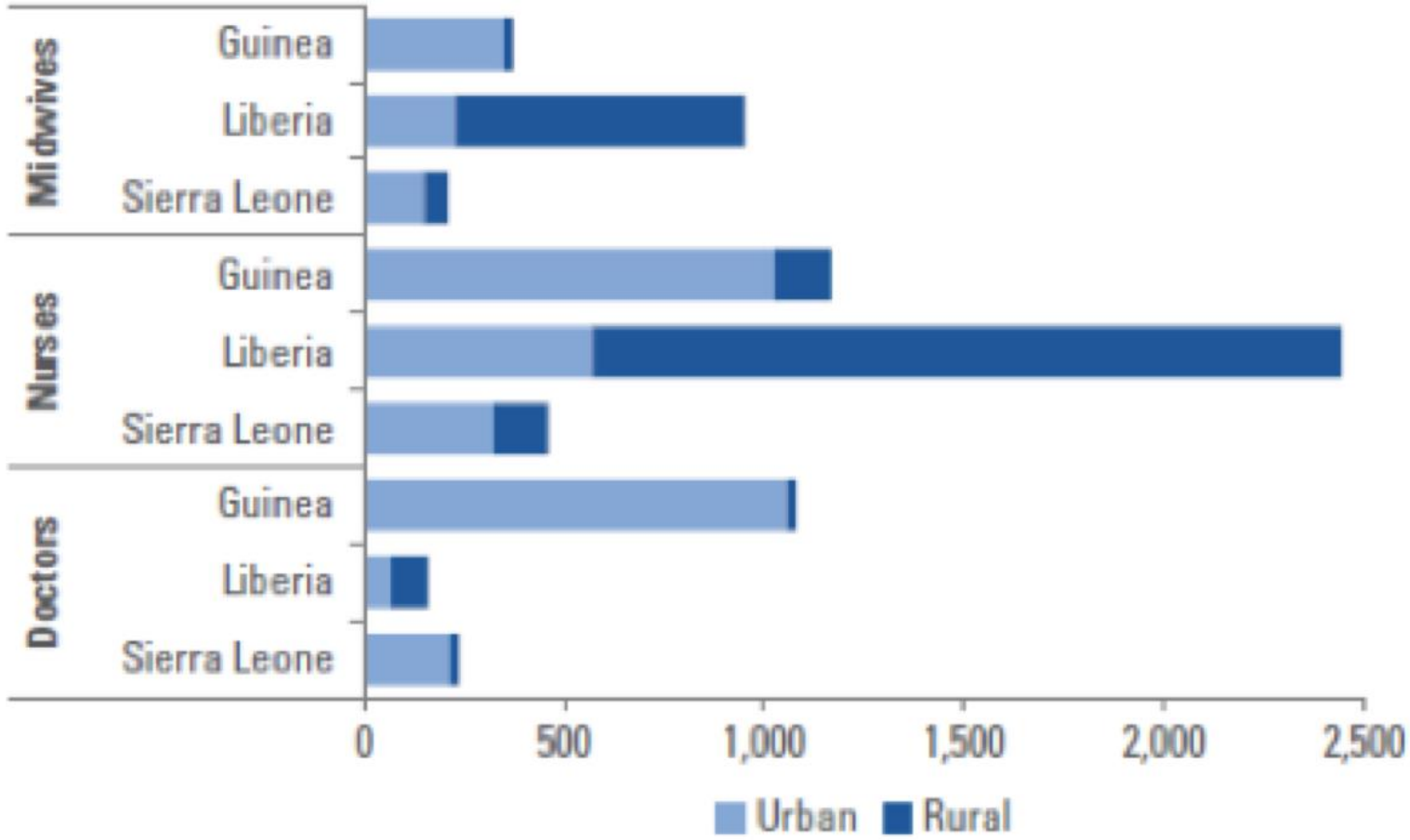


Table 5 Cost of Achieving Minimum Densities of Doctors, Nurses, and Midwives, 2015-29 under Two Scenarios *US dollars, millions/cost per capita*

Country	Scenario	2015	2020	2025	2029
Liberia	Baseline scenario	16.2/3.6	27.2/5.1	5.6/7.3	68.9/9.6
	Alternate scenario	13.3/2.9	22.3/4.2	37.4/5.9	56.5/7.9
Guinea	Baseline scenario	6.7/0.6	15.8/1.3	37.4/2.6	74.3/4.6
	Alternate scenario	6.1/0.6	14.3/1.1	33.7/2.3	67.0/4.2

Distribution of Doctors, Nurses, and Midwives across Rural and Urban Areas, 2015



Note: Guinea's internal classification system of urban and rural was applied. Comparable rural and urban classifications were not available for Liberia and Sierra Leone, and thus the county or district with the capital was defined as the urban area with the remaining counties and districts classified as rural. In Liberia, the urban area was defined as Montserrado County; in Sierra Leone, the urban area was defined as the Western Area.

Table 6 Annual Rural versus Urban Growth Rates Required to Reach Plan Targets

Percent

Country (target year)	Doctors		Nurses		Midwives	
	Urban	Rural	Urban	Rural	Urban	Rural
Liberia (2021)	5.6	12.2	6.0	6.9	6.1	2.4
Guinea (2024)	11.3	63.0	12.3	33.7	11.5	44.3
Sierra Leone (2025)	4.2	49.9	6.8	33.8	6.8	34.3

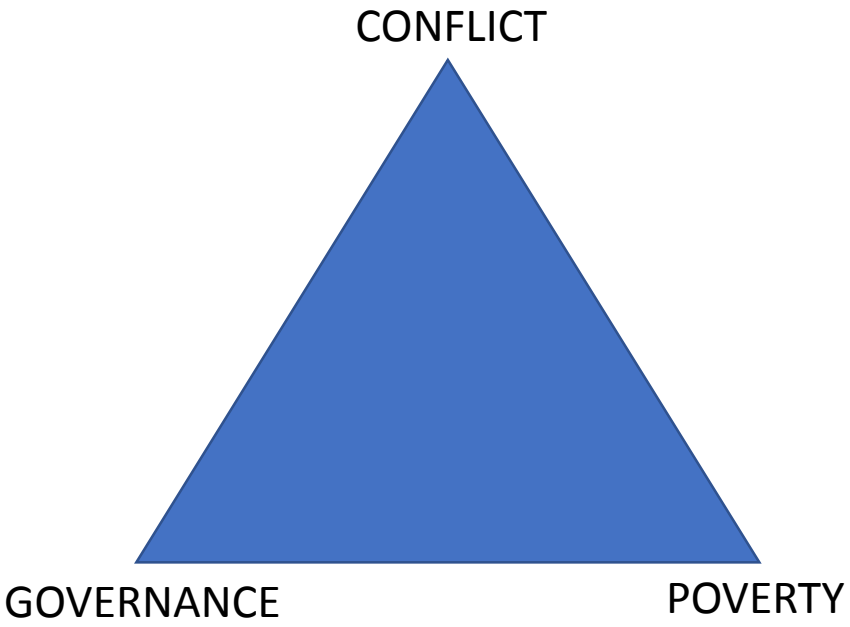
- Do these analyses suggest that it is over–ambitious for the 3 countries to reach even 2.5 HWs/1000 population, even by 2030? (Even though other African countries have done so?)
- [Is a ‘sea-change’ in health system functioning supported by the international community an impossibility?]

- Usually the linear thinking of this kind of modelling makes things look easy – in this case it seems to make things look impossible?

- Might some systems thinking be helpful?

- What are the elements of the system that constrain rapid expansion of labour force?
  - Training system capacity – lag times for enhancing – path dependencies
  - Factors affecting drop-out, employment rates and attrition – economy – ability to pay wages that minimize those; to adequately fund training schools – feedback loops
  - Governance – employment and management systems in the public sector; corruption – emergent behaviours

- What are the processes through which the 3 countries have ended up with outlying low levels of health workforce?



- What are the entry points by which those processes might be shifted?
- Is international investment directly in workforce the wrong one?
- Is international investment in anything the wrong thing?

Health systems research implications

- Clear problems with the linear thinking embodied in workforce planning exercises
- Are such exercises useful as a starting point?
- What else do we need to get beyond the starting point?
- Entry points may not be intuitive; dangers of low-hanging fruit thinking (Donella Meadows)
- ‘Disruptive’ thinking probably more useful. Is intervention research based on disruption dangerous though?

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