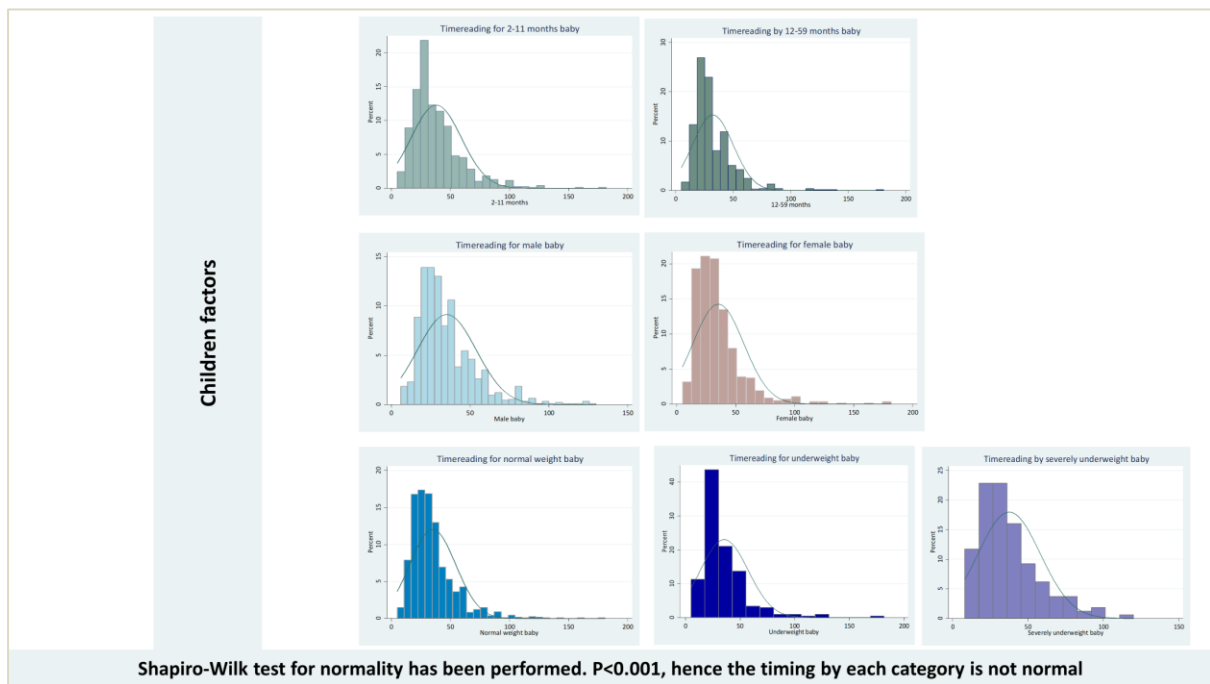
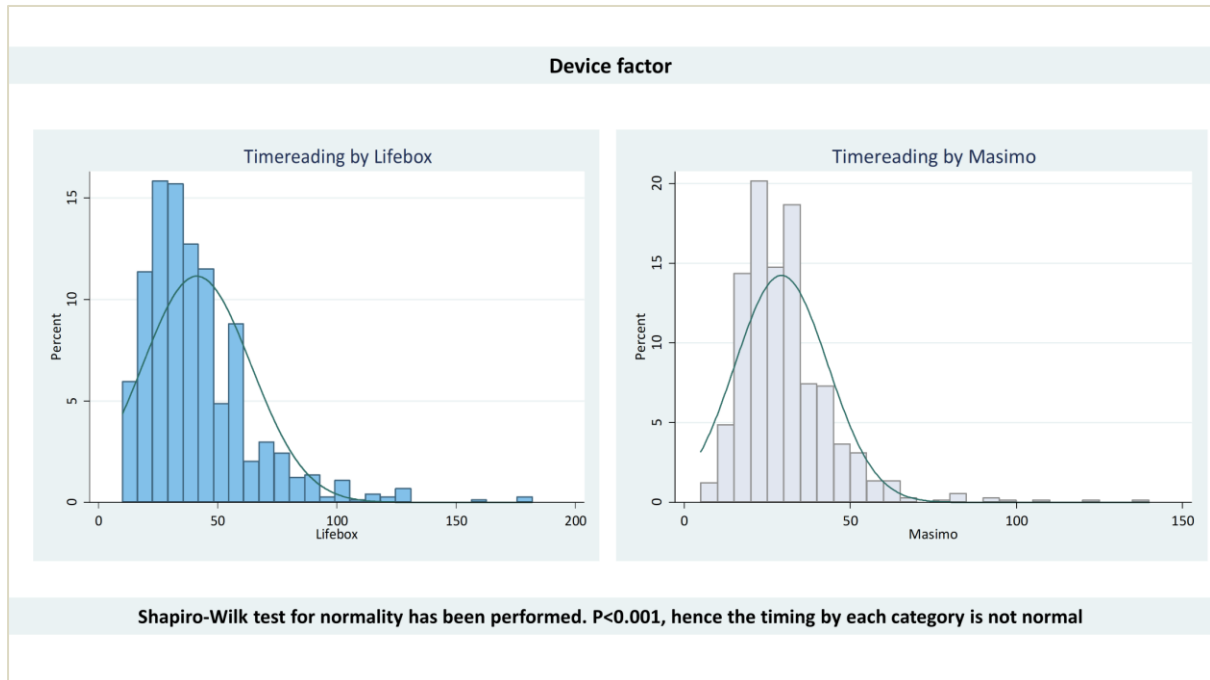
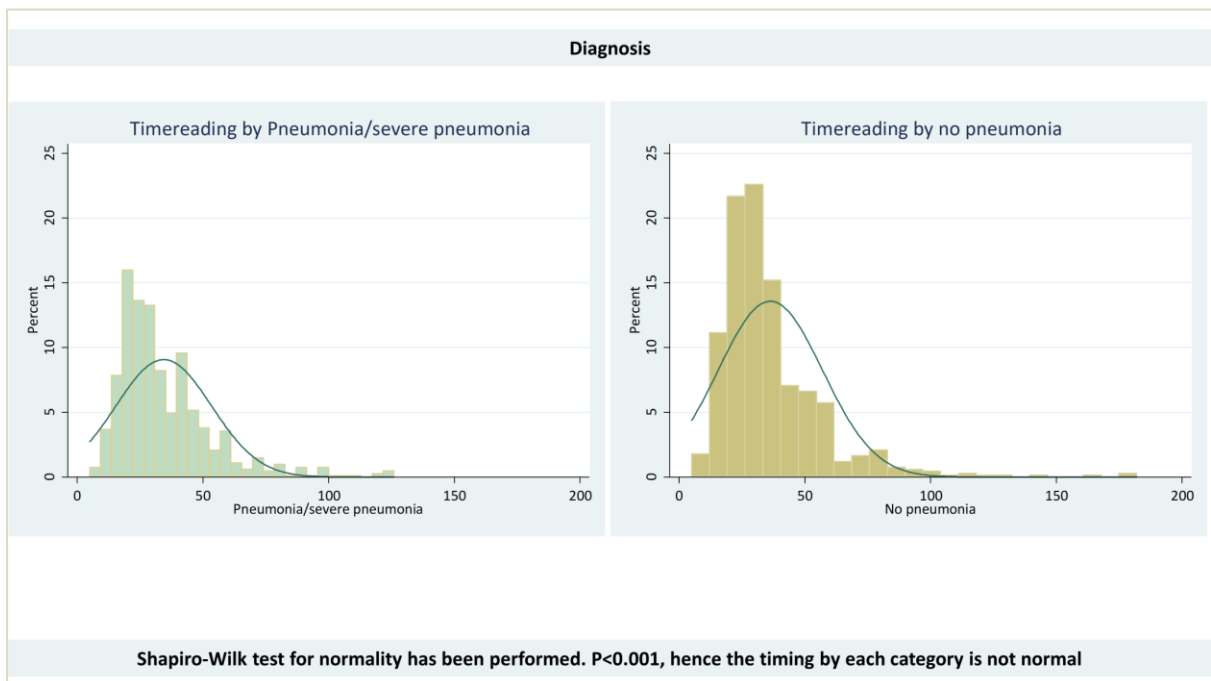
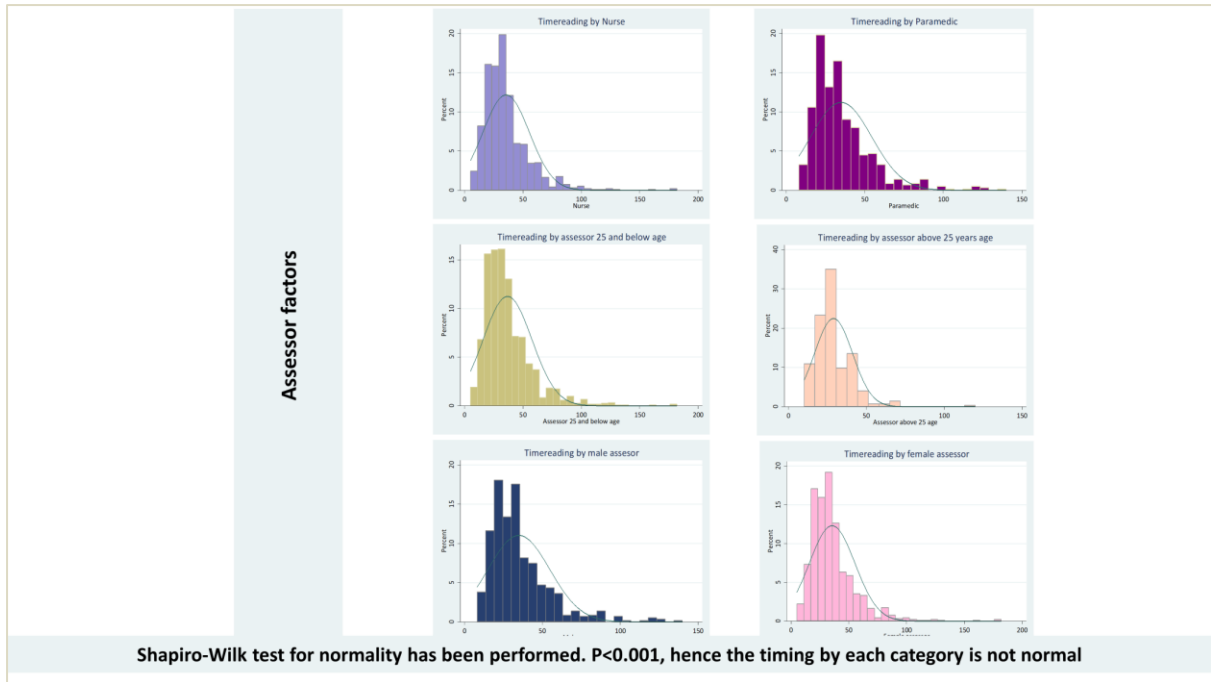


Supplementary Figures:

Figure S1: Histograms of time-reading for obtaining a stable SpO₂ reading by groups to assess normality.





Supplementary Tables:

Table S1: Lifebox vs Masimo model, technical specification and price comparison.

Requirements	Lifebox A-care AH-M1	Masimo Rad-5v®
Price		
Price (USD)	200	500
General requirements		
For adults, children and neonates	Yes	Yes
For all skin pigmentations	No data found	No data found
Weight range for each patient category	No data found	No data found
SpO2 detection to include the range: 70–100%	Yes, 0-100%	Yes, 1-100%
SpO2 resolution: 1% or less.	1%	1%
SpO2 accuracy within $\pm 3\%$ for all patients and perfusion/movement conditions.	70%-100%: $\pm 2\%$; 0%-69%: not defined	2% with no motion low perfusion adults/paediatrics. 3% with motion and low perfusion neonates
Pulse rate range: 30–240 bpm.	25-250 bpm	25-240 bpm
Pulse rate resolution: 1 bpm or less	1 bpm	1 bpm
Pulse rate accuracy within ± 3 bpm.	± 2 bpm	3 bpm with no motion and in low perfusion, 5 bpm with motion
Audio		
Audible and visual alarms for low/high saturation and pulse rate, threshold set by user	Yes	Yes
Audible and visual alarms for sensor error or disconnected, system errors, low battery	Yes	Yes
Probes		
Capable of working with, and supplied with, adult, paediatric and neonatal reusable probes	Yes	Yes
Electrical characteristics		
Operated by replaceable battery power supply, either rechargeable or single use	Li-ion rechargeable battery or, 3 AA batteries	4XAA Alkaline batteries
Display		
%SpO ₂	Yes	Yes
Pulse rate	Yes	Yes
Plethysmographic waveform	Yes	Yes
Alarm messages	Yes	Yes
Battery state indication	Yes	Yes
Others	No	Perfusion Index, Signal IQ (SIQ) bar
Optional		

Requirements	Lifebox A-care AH-M1	Masimo Rad-5v®
Internal data storage for patient trends and event log	Yes; 1-99 ID and 300 records for each ID	The Rad-5 can store 72 hours of SpO2 and Pulse Rate and Perfusion Index trend data, captured at 2 second intervals. This trend data can then be transferred to a PC for evaluation. Trend data is stored in non-volatile memory, so it is not erased when the device is shut off or when the batteries are replaced
FDA/CE Approval		
FDA/CE Approved	Yes	Yes,

Table S3: Number of assessments by assessor type.

Type of assessor	Number of assessments
Nurse 1	64
Nurse 2	76
Nurse 3	78
Nurse 4	82
Nurse 5	74
Nurse 6	76
Nurse 7	86
Nurse 8	96
Nurse 9	80
Nurse 10	96
Nurse 11	94
Paramedic 1	104
Paramedic 2	92
Paramedic 3	76
Paramedic 4	38
Paramedic 5	94
Paramedic 6	88
Paramedic 7	84

Table S4: Generalised estimating equation (GEE) regression to assess the association between time taken to obtain successful measurement of SpO₂ within 60 seconds and different characteristics of participants presented in adjusted odds ratio and 95% Confidence Interval (N=1474).

	%	Crude Odds ratio	95% CI Lower limit	95% CI Upper limit	P value	Adjusted Odds ratio	95% CI Lower limit	95% CI Upper limit	P value
Diagnosis									
Fever and other	92								
Pneumonia or severe pneumonia	93	1.13	0.76	1.67	0.55	1.33	0.87	2.04	0.19
Age of child									
2-11 months	89								
12- 59 months	96	2.07	1.32	3.24	0.00	2.64	1.64	4.24	0.00
Sex of child									
Male	92								
Female	92	0.92	0.63	1.36	0.69	0.87	0.58	1.32	0.52
Weight for age of child									
Not Under-Weight (-2 SD and above)	93								
Under-Weight (below -2SD)	92	1.06	0.60	1.86	0.84	1.09	0.60	1.98	0.78
Severely Under Weight (below -3SD)	89	0.87	0.49	1.57	0.65	0.87	0.48	1.57	0.64
Type of pulse oximetry									
Lifebox	87								
Masimo	98	6.97	3.41	14.25	0.00	7.29	3.74	14.20	0.00
Type of assessors									
Nurse	92								
Paramedic	92	0.98	0.31	3.07	0.98	1.19	0.41	3.44	0.75
Age of assessors (in years)									
25 years and below	91								
Above 25	98	5.86	0.63	54.46	0.12	4.75	1.21	18.58	0.03
Sex of assessor									
Male	92								
Female	92	1.06	0.34	3.32	0.91	0.85	0.30	2.45	0.76