SUPPLEMENTAL MATERIAL

In this supplemental material, we present three complimentary sections. Section “A” is about Empirical Optimal Concordance; in other words, our proposal for interpreting optimal concordance between two compared CVD scores but using a more realistic reference (Supplemental tables 1 and 2). Section “B” is about a concordance evaluation between 10-years-high-risk predictions of different pairs of CVD scores but using cut-points recommended by every score guide and performing Kappa index (Supplemental table 3). Section “C” presents two composed figures about distributions of prevalence of 10-years-high-risk of CVD across different sub-populations (Ayacucho, Lima, urban Puno, rural Puno and Tumbes) for epidemiological interest. In Supplemental Figure 1 we used different cut-points for defining 10-years-high-risk for each score, following recommendations from every score-guide (as we did for Figure 1 of the manuscript). In Supplemental Figure 2 we used a common 20% cut-point for every CVD score in order to define 10-years-high-risk (as per manuscript’s Figure 2).

Section A: Empirical Optimal Concordance.

Traditionally, interpretations of concordance indexes follow criteria recommended by original authors of each index or by experts in the field, usually statisticians or methodologists. For example, in our manuscript's methods section we cited one of these recommendations for interpreting Lin´s Concordance Correlation Coefficient (CCC), proposed by McBride (2005). However, this "interpretation rule" could be too much strict or just inappropriate for specific measures we are comparing. In here we propose to use an empirical approximation for establishing "optimal concordance level" in order to interpret CCC and Kappa values. This proposal consist in using CCC/Kappa value calculated for "different versions of same CVD risk score" like a cut-point of "empirical optimal concordance" (expected optimal agreement based on direct empirical evidence).

Thus, supplemental tables 1 and 2 show information for defining cut-point of "empirical optimal concordance" mentioned above. Specifically, we used two versions of FRS and four versions of SOCRE. In the case of SCORE, we considered: SCORE-1 high-risk without high-density lipoprotein cholesterol (HDL-c); SCORE-2 high-risk with HDL-c; SCORE-3 low-risk without HDL-c; and SCORE-4 low-risk with HDL-c. In the case of FRS we used mentioned non-lab and lipids versions. Although CCC/Kappa values from supplemental tables 1 and 2 are not just a unique value (cut-point), reader can use inferior limit of every interval for defining optimal concordance cut-point: a) for Kappa index 0.70-0.74 (Supplemental Table 1); b) for CCC 0.93-0.95 from global, 0.78-0.98 from Ayacucho (clearly an especial case), from Lima 0.92-0.96, from Puno (rural) 0.90-0.95, from Puno (urban) 0.90-0.94, from Tumbes 0.92-0.93 (Supplemental Table 2).

Supplemental Table S1 Agreement between different versions of the same 10-year CVD risk score-pairs using cut-offs as per recommended guidelines.

CVD Risk Scores	n	N° Cases by "A"	N° Cases by "B"	N° Cases in common (A&B)	Percentage of Overlapping (A&B respect to B)	Positive Agreement (PA)	Negative Agreement (NA)	Kappa Index (Concordance)
A=FRS-non-lab B=FRS-lipids	1749	264	239	192	**80.3%**	76.3%	96.0%	**0.72**
A=SCORE-1 B=SCORE-2	1913	144	170	119	**70.0%**	75.8%	97.8%	**0.74**
A=SCORE-3 B=SCORE-4	1730	26	31	20	**64.5%**	70.2%	99.5%	**0.70**

Supplemental Table S2 Agreement between different versions of the same CVD risk prediction tools, calculated as continuous risk

CVD Risk Scores	Rho (Lin's Concordance Correlation Coefficient)											
	Global		Ayacucho (rural)		Lima (urban)		Puno (rural)		Puno (urban)		Tumbes (urban)	
	n	Rho	n	Rho	n	Rho	n	Rho	n	Rho	n	Rho
FRS-non-lab vs. FRS-lipids	1749	**0.93**	44	**0.78**	692	**0.94**	273	**0.90**	245	**0.90**	495	**0.93**
SCORE-1 vs. SCORE-2	1913	**0.93**	78	**0.96**	822	**0.92**	273	**0.94**	245	**0.93**	495	**0.92**
SCORE-3 vs. SCORE-4	1730	**0.95**	44	**0.98**	673	**0.96**	273	**0.95**	245	**0.94**	495	**0.93**

Section B: Concordance between ten years high-risk CVD predictions as per guidelines, using recommended cut-off points for each score.

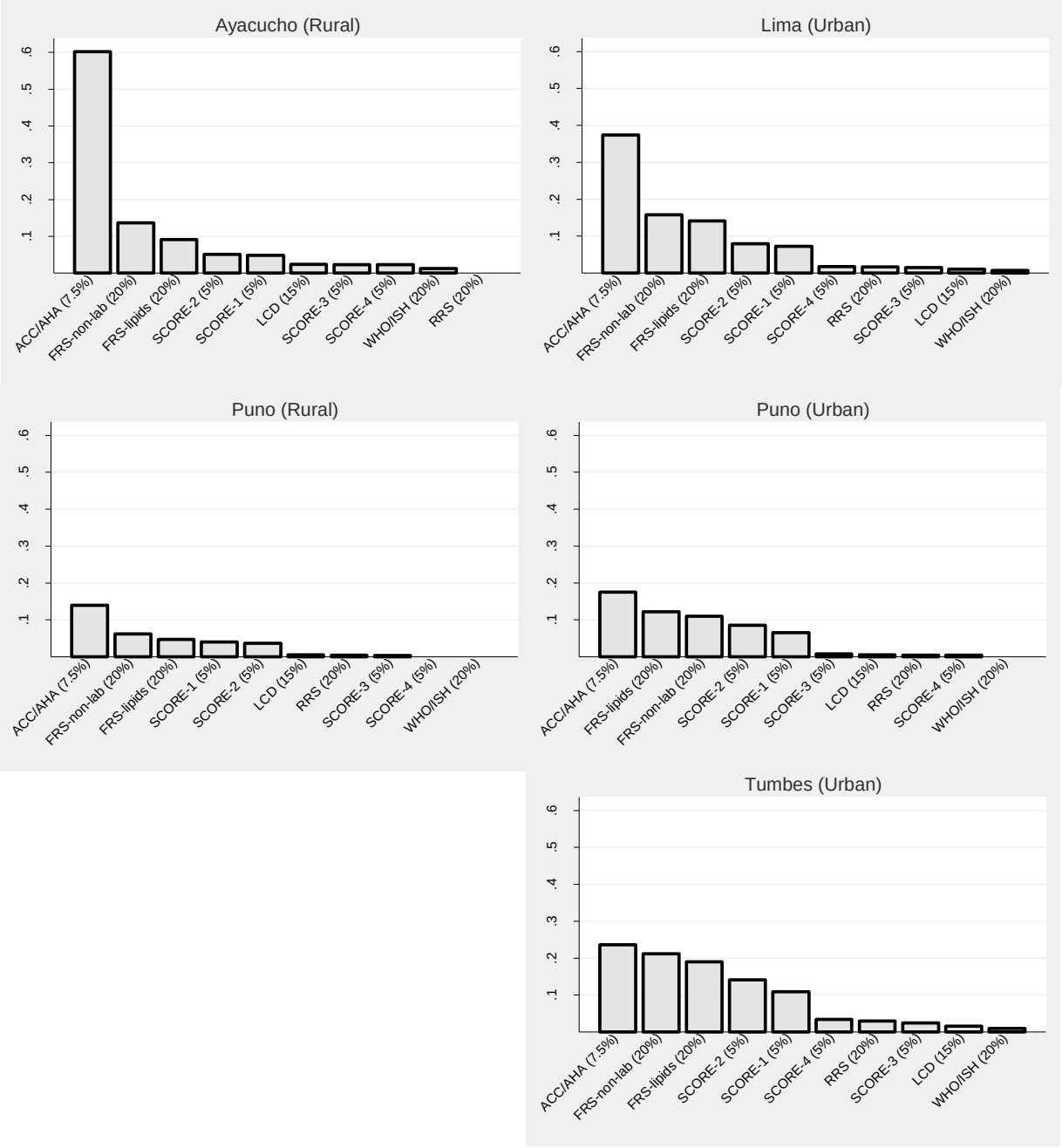
Supplemental Table S3 Agreement between 10-year high-risk CVD pairs using cut-offs as per recommended guidelines.

CVD Risk Scores	n	N° Cases by "A"	N° Cases by "B"	N° Cases in common (A&B)	Percentage of Overlapping (A&B respect to B)	Positive Agreement (PA)	Negative Agreement (NA)	Kappa Index (Concordance)
Comparison between scores								
A=ACC/AHA model B=WHO	1923	557	12	9	**75.0%**	3.2%	83.2%	**0.02**
A= ACC/AHA model B= FRS-non-lab	1749	469	264	160	**60.6%**	43.7%	85.1%	**0.30**
A= ACC/AHA model B= FRS-lipids	1749	469	239	161	**67.4%**	45.5%	86.2%	**0.33**
A=ACC/AHA model B=RRS	1767	506	29	20	**69.0%**	7.5%	83.5%	**0.05**
A=ACC/AHA model B=LCD	1923	557	19	15	**78.9%**	5.2%	83.3%	**0.03**
A=ACC/AHA model B=SCORE-1	1923	557	145	98	**67.6%**	27.9%	83.9%	**0.18**
A=ACC/AHA model B=SCORE-2	1913	549	170	117	**68.8%**	32.5%	84.4%	**0.22**
A=ACC/AHA model B=SCORE-3	730	382	31	17	**54.8%**	8.2%	87.6%	**0.02**
A=ACC/AHA model B=SCORE-4	730	382	31	17	**54.8%**	8.2%	87.6%	**0.05**

Section C: Distributions of Prevalence of high-risk CVD across different sub-populations.

Supplemental Figure S1

Prevalence of high-risk CVD status as per guidelines, using recommended cut-off points for each score.



Proportion of high-risk individuals:

Ayacucho: ACC/AHA model: 60.2%, [95%CI 49.5-71.0%]; FRS-NON-LAB: 13.6%, [95%CI 3.1-24.2%]; FRS-LIPIDS: 9.1% [95%CI 0.3-17.9%]; RRS: 0%; LCD: 2.4% [95%CI 0-5.8%]; WHO/ISH: 1.2% [95%CI 0-3.6%]; SCORE-1: 4.8% [95%CI 0.1-9.5%]; SCORE-2: 5.1% [95%CI 0.1-10.1%]; SCORE-3: 2.3% [95%CI 0-6.9%]; SCORE-4: 2.3% [95%CI 0-6.9%]

Lima: ACC/AHA model: 37.4%, [95%CI 34.0-40.7%]; FRS-NON-LAB: 15.8%, [95%CI 13.0-18.5%]; FRS-LIPIDS: 14.2% [95%CI 11.6-16.8%]; RRS: 16.8% [95%CI 0.7-2.6]; LCD: 1.0% [95%CI 0.4-1.7%]; WHO/ISH: 0.7% [95%CI 0.1-1.2%]; SCORE-1: 7.3% [95%CI 5.5-9.0%]; SCORE-2: 7.9% [95%CI 6.0-9.8%]; SCORE-3: 1.5% [95%CI 0.6-2.4%]; SCORE-4: 1.8% [95%CI 0.8-2.8%]

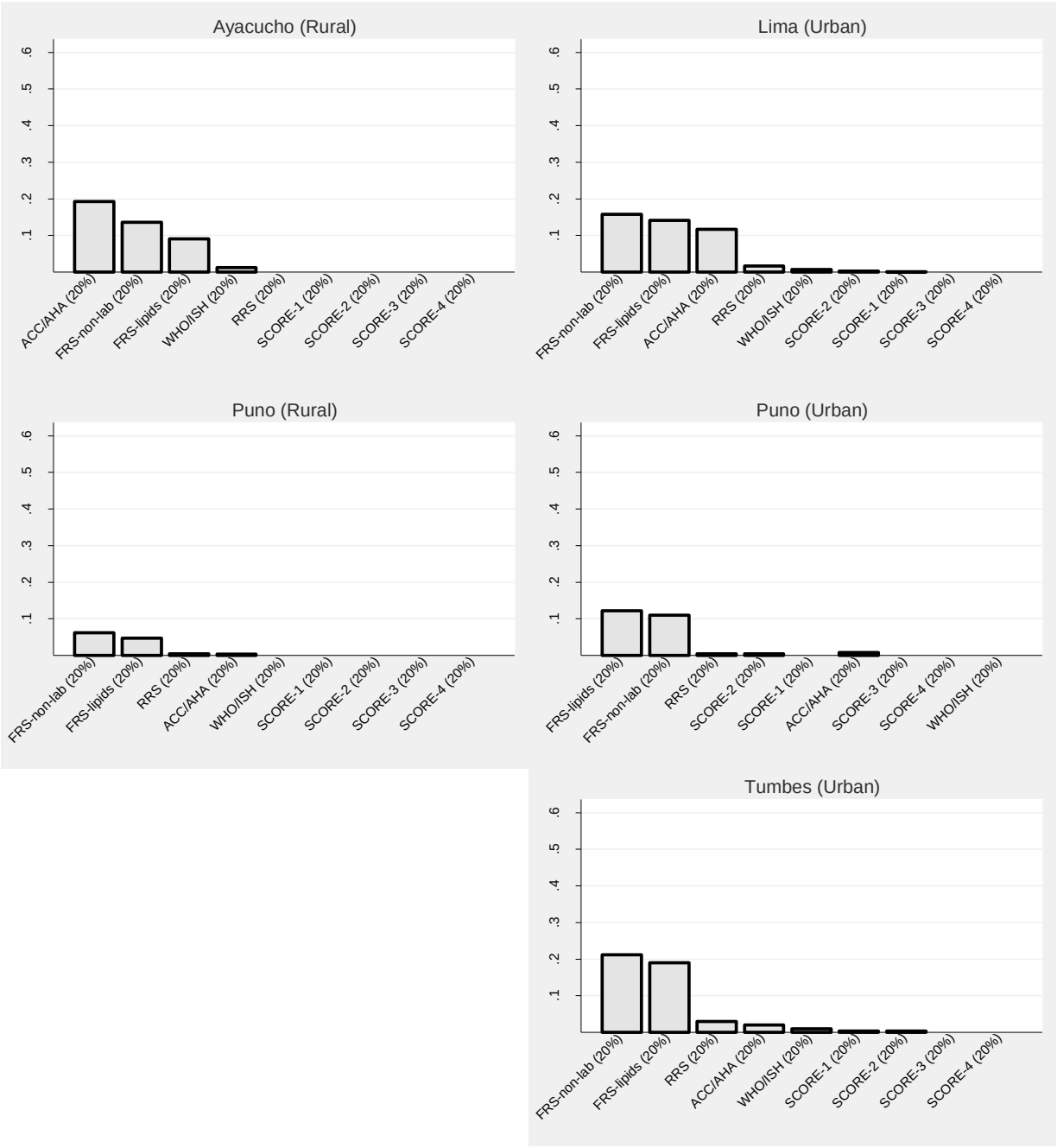
Puno (Rural): ACC/AHA model: 13.9%, [95%CI 9.8-18.1%]; FRS-NON-LAB: 6.2%, [95%CI 3.3-9.1%]; FRS-LIPIDS: 4.8% [95%CI 2.2-7.3%]; RRS: 0.42% [95%CI 0-1.3]; LCD: 0.56% [95%CI 0-1.3%]; WHO/ISH: 0%; SCORE-1: 4.0% [95%CI 1.7-6.4%]; SCORE-2: 3.7% [95%CI 1.4-5.9%]; SCORE-3: 0.37% [95%CI 0-1.1%]; SCORE-4: 0%

Puno (Urban): ACC/AHA model: 17.5%, [95%CI 12.8-22.4%]; FRS-NON-LAB: 11.0%, [95%CI 7.1-15.0%]; FRS-LIPIDS: 12.3% [95%CI 8.1-16.4%]; RRS: 0.48% [95%CI 0-1.4]; LCD: 0.54% [95%CI 0.1-1.3%]; WHO/ISH: 0%; SCORE-1: 6.5% [95%CI 3.4-9.7%]; SCORE-2: 8.6% [95%CI 5.0-12.1%]; SCORE-3: 0.82% [95%CI 0-2.0%]; SCORE-4: 0.41% [95%CI 0-1.2%]

Tumbes: ACC/AHA model: 23.6%, [95%CI 19.9-27.4%]; FRS-NON-LAB: 21.2%, [95%CI 17.6-24.8%]; FRS-LIPIDS: 19.0% [95%CI 15.5-22.5%]; RRS: 3.0% [95%CI 1.4-4.5]; LCD: 1.6% [95%CI 0.5-2.7%]; WHO/ISH: 1.0% [95%CI 0.1-1.9]; SCORE-1: 10.9% [95%CI 8.2-13.7%]; SCORE-2: 14.1% [95%CI 11.1-17.2%]; SCORE-3: 2.4% [95%CI 1.1-3.8%]; SCORE-4: 3.4% [95%CI 1.8-5.0%].

Supplemental Figure S2

Prevalence of high-risk CVD status using common 20% cut-off across scores.



Proportion of high-risk individuals:

Ayacucho: ACC/AHA model: 19.3%, [95%CI 10.6-2.8%]; FRS-NON-LAB: 13.6%, [95%CI 3.1-24.2%]; FRS-LIPIDS: 9.1% [95%CI 0.3-17.9%]; RRS: 0%; WHO/ISH: 1.2% [95%CI 0-3.6]; SCORE-1: 0%; SCORE-2: 0%; SCORE-3: 0%; SCORE-4: 0%.

Lima: ACC/AHA model: 11.7%, [95%CI 9.5-13.9%]; FRS-NON-LAB: 15.8%, [95%CI 13.0-18.5%]; FRS-LIPIDS: 14.2% [95%CI 11.6-16.8%]; RRS: 1.7% [95%CI 0.8-2.6%]; WHO/ISH: 0.7% [95%CI 0.1-1.2]; SCORE-1: 0.1% [95%CI 0-0.4%]; SCORE-2: 0.2% [95%CI 0-0.6%]; SCORE-3: 0%; SCORE-4: 0%.

Puno (Rural): ACC/AHA model: 0.37%, [95%CI 0-1.1%]; FRS-NON-LAB: 6.2%, [95%CI 3.3-9.1%]; FRS-LIPIDS: 4.8% [95%CI 2.2-7.3%]; RRS: 0.42% [95%CI 0-1.3%]; WHO/ISH: 0.%; SCORE-1: 0%; SCORE-2: 0%; SCORE-3: 0%; SCORE-4: 0%.

Puno (Urban): ACC/AHA model: 0.82%, [95%CI 0-2.0%]; FRS-NON-LAB: 11.0%, [95%CI 7.1-15.0%]; FRS-LIPIDS: 12.3% [95%CI 8.1-16.4%]; RRS: 0.48% [95%CI 0-1.4%]; WHO/ISH: 0.%; SCORE-1: 0%; SCORE-2: 0.41% [95%CI 0-1.2%]; SCORE-3: 0%; SCORE-4: 0%.

Tumbes: ACC/AHA model: 2.0%, [95%CI 0.8-3.3%]; FRS-NON-LAB: 21.2%, [95%CI 17.6-24.8%]; FRS-LIPIDS: 19.0% [95%CI 15.5-22.5%]; RRS: 3.0% [95%CI 1.4-4.5%]; WHO/ISH: 1.0% [95%CI 0.1-1.9]; SCORE-1: 0.4 [95%CI 0-1.0%]; SCORE-2: 0.4% [95%CI 0-1.0%]; SCORE-3: 0%; SCORE-4: 0%.