Supplementary file 2. Presentation of data using vital capacity.

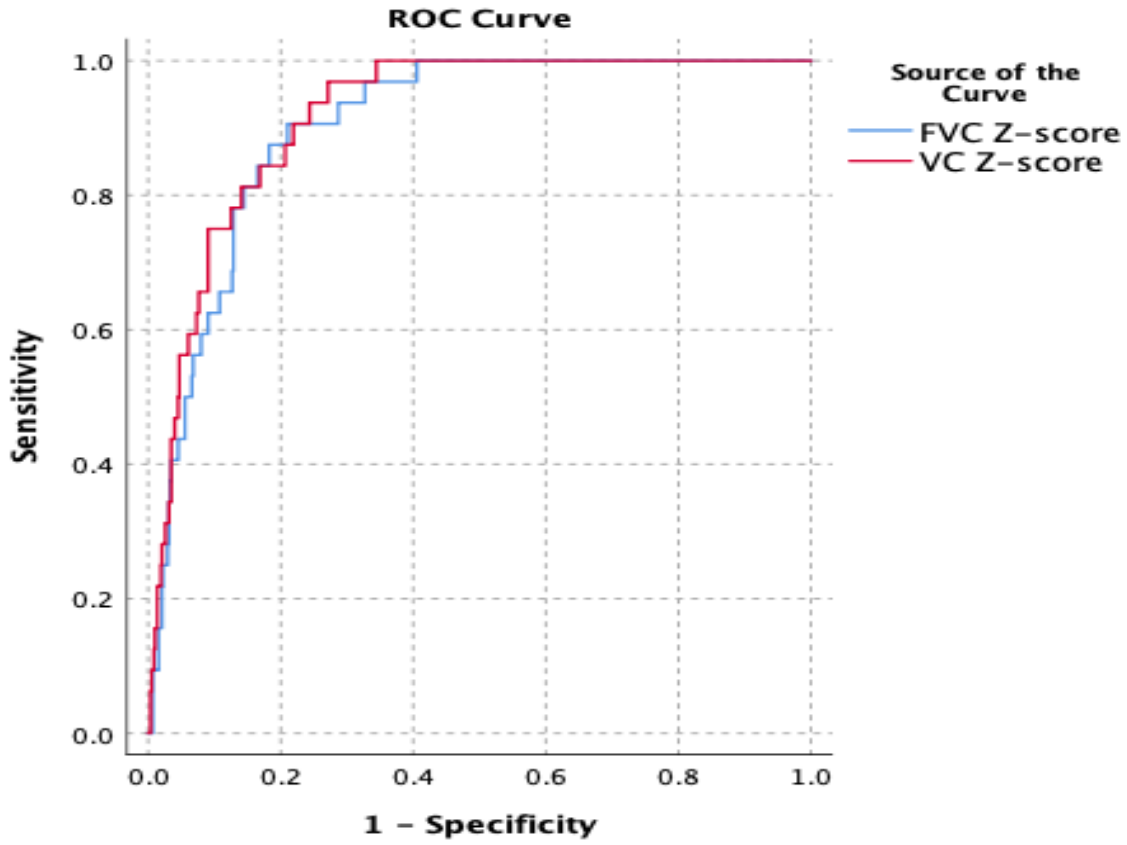

Figure 1. Comparison of receiver Operating Characteristic (ROC) curves for the ability of *FVC Z-score* (AUROC 0.904, 95%CI 0.867-0.941) and *VC Z-score* (AUROC 0.917, 95%CI 0.884-0.951) to identify restrictive lung function (TLC<lower limit of normal).

Table 1. Lung function measures based on vital capacity in individuals with and without restrictive lung function defined by TLC <LLN.

Parameter	***Restrictive lung function, n=32***	***No restrictive lung function, n=575***	***p-value***
VC % of predicted	77.5±10.2	97.7±12.2	<0.001
VC Z-score	-1.7±0.7	-0.2±0.9	<0.001
FEV_1/VC Z-score	-0.1±0.9	-0.5±1.0	0.014

Results presented as mean ± SD. Abbreviations: FEV_1 = forced expiratory volume in one second; VC = vital capacity; LLN = lower limit of normal; SD = standard deviation; TLC = total lung capacity. Percent of predicted and Z-scores for FEV_1 and FEV_1/VC are based on GLI 2012 reference values and corresponding for TLC are based on GLI 2021 reference values.

Table 2. Accuracy for spirometry measures to discriminate restrictive lung function (TLC<LLN) using vital capacity. The optimal cut-off values, sensitivity and specificity for respective parameter are defined by Youden method (i.e., highest Youden's index).

Parameter	*Sensitivity (%)*	*Specificity (%)*	*AUROC (95% CI)*	*p-value*
VC Z-score (cut-off -0.654)	96.9	72.9	0.917 (0.884-0.951)	<0.001
VC % of predicted (cut-off 89.2%)	93.8	77.6	0.915 (0.881-0.948)	<0.001
FEV_1 Z-score (cut-off -0.98)	81.3	71.8	0.814 (0.755-0.872)	<0.001
FEV_1 percent of predicted (cut-off 87.5%)	81.3	71.0	0.812 (0.754-0.870)	<0.001
FEV_1/VC Z-score (cut-off -0.696)	81.3	36.0	0.615 (0.513-0.716)	0.029

Abbreviations: AUROC = area under the ROC curve; CI = confidence interval; FEV_1 = forced expiratory volume in 1 second; VC = vital capacity; LLN = lower limit of normal; Z-score = standardized residual; RSP = restrictive spirometry pattern; TLC = total lung capacity.

Table 3. Overall performance and accuracy of different restrictive spirometry patterns (RSP) using vital capacity in order to discriminate restrictive lung function (TLC <LLN).

RSP SVC	***Efficiency***	***Sensitivity (%)***	***Specificity (%)***	***PPV (%)***	***NPV (%)***
Definition 1: VC <80% of pred & $FEV_1/VC \geq 0.7$	0.95	46.9	97.2	48.4	97.0
Definition 2: VC <LLN & $FEV_1/VC \geq LLN$	0.95	37.5	98.4	57.1	96.6
Definition 3: VC <89.2% of pred* & $FEV_1/VC \geq LLN$	0.83	90.6	82.3	22.1	99.4
Definition 4: VC Z-score<-0.654* & $FEV_1/VC \geq LLN$	0.79	93.8	78.3	19.4	99.6

The prevalence of RSP VC definitions 1-4 was 5.1% (31/607), 3.5% (21/607), 21.6% (131/607) and 25.5% (155/607), respectively. Abbreviations: *= The best cut-off defined by Youden's method. PPV, NPV, sensitivity and specificity were calculated from crosstabulations. FEV_1 = forced expiratory volume in one second; VC = vital capacity; LLN = lower limit of normal; NPV = negative predictive value; PPV = positive predictive value; RSP = restrictive spirometry pattern; TLC = total lung capacity, % of pred=percent of predicted value.