

Supplementary Table 1. Analytical methods used to measure SARS-CoV-2 antibody level.

| Cohort | Type of serology test | Unit of measurement | Mean (SD) of serological level* | Mean (SD) of standardized serological level*† |
|----------------------|--------------------------------------|---------------------|---------------------------------|---|
| Germany-Munich | Roche Elecsys® anti SARS CoV2 S - | U/mL | 47.35 (2.68) | 3.72 (0.06) |
| Italy-Bari | Abbot SARS-COV-2 IgG II Quant test | AU/ml | 1711.04 (252.94) | 8.45 (0.13) |
| Italy-Bologna | Ab anti SARS CoV-2 S (RBD) IgG ECLIA | BAU/ml | 1062.70 (17.96) | 7.38 (0.02) |
| Italy-Brescia | Roche Elecsys® anti SARS CoV2 S | U/mL | 2349.10 (162.77) | 6.07 (0.06) |
| Italy-Trieste | CMIA anti S1-RBD | RLU | 3383.6 (471.98) | 6.15 (0.06) |
| Italy-Verona | CLIA trimeric S IgG | BAU/ml | 868.39 (39.53) | 6.39 (0.02) |
| Romania-Multicenter | Abbot SARS-COV-2 IgG II Quant test | AU/mL | 1702.06 (3674.69) | 6.35 (0.99) |
| Slovakia-Multicenter | QuantiVac ELISA (IgG) EUROIMMUN | RU/mL | 904.82 (95.23) | 8.58 (0.19) |

* Adjusted by age, according to the Standard European Population

† Standardized according to the formula: $\ln(AB) / sd[\ln(AB)]$, where AB stands for antibody level.

U=units

AU=antibody units

BAU=binding antibody units

RLU=relative light units

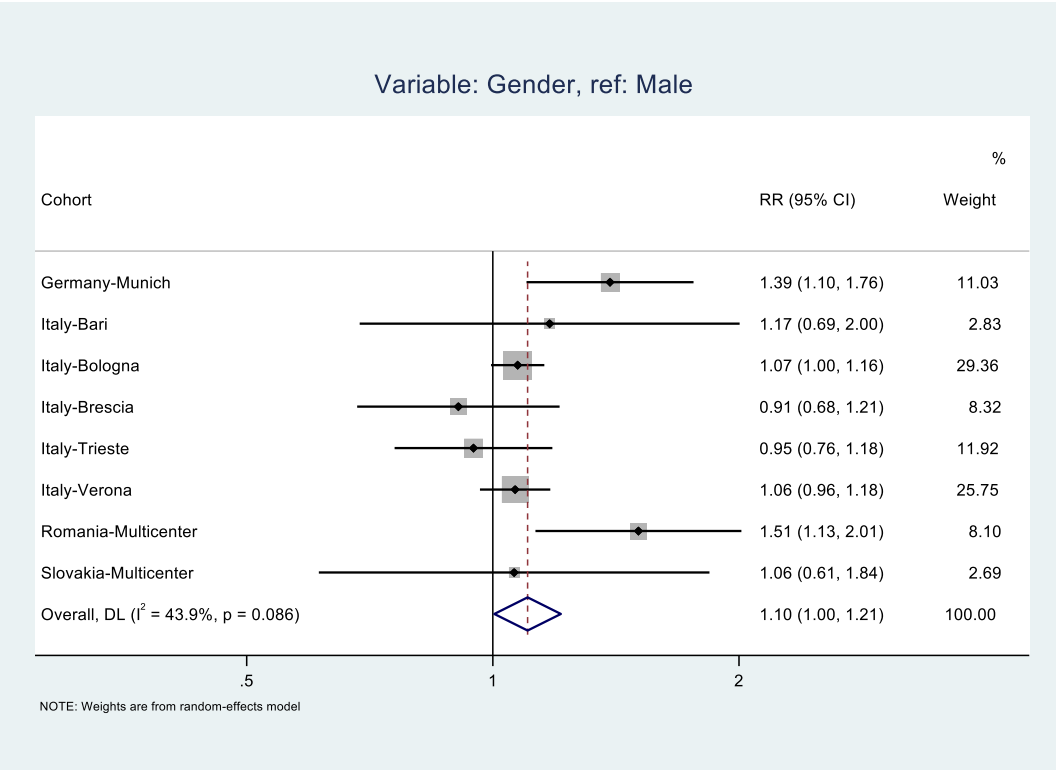
RU=relative units

Supplementary Table 2. Standardized serology level distribution by cohort, sex and age

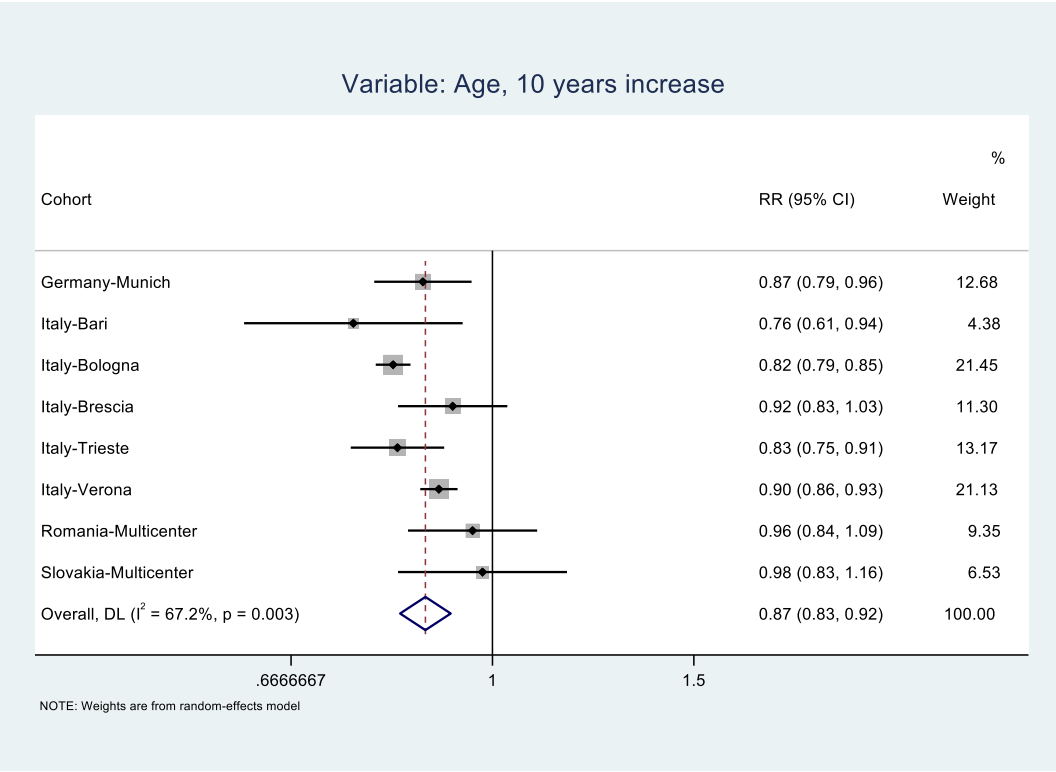
| Variable | Standardized. quantitative serology level – Mean (SD) | | | | | | | |
|-----------|---|-------------|-------------------|-------------------|---------------|--------------|-------------------------|--------------------------|
| Cohorts | Germany- Munich | Italy-Bari | Italy- Bologna | Italy- Brescia | Italy-Trieste | Italy-Verona | Romania- Multicenter | Slovakia- Multicenter |
| Sex* | - | - | - | - | - | - | - | - |
| Male | 3.60 (0.10) | 8.37 (0.19) | 7.29 (0.04) | 6.12 (0.13) | 6.10 (0.12) | 6.35 (0.04) | 6.07 (0.81) | 8.42 (0.46) |
| Female | 3.83 (0.07) | 8.52 (0.17) | 7.41 (0.02) | 6.06 (0.07) | 6.15 (0.08) | 6.40 (0.03) | 6.41 (1.03) | 8.59 (0.21) |
| Age (yrs) | - | - | - | - | - | - | - | - |
| ≤ 29 | 4.05 (0.09) | 8.77 (0.30) | 7.74 (0.04) | 6.30 (0.12) | 6.52 (0.17) | 6.62 (0.04) | 6.46 (0.54) | 8.70 (0.33) |
| 30-39 | 3.70 (0.18) | 8.42 (0.15) | 7.48 (0.03) | 5.82 (0.17) | 6.17 (0.12) | 6.41 (0.04) | 6.16 (0.95) | 8.41 (0.20) |
| 40-49 | 3.51 (0.13) | 8.81 (0.23) | 7.17 (0.03) | 5.89 (0.13) | 6.00 (0.08) | 6.22 (0.04) | 6.32 (1.04) | 8.45 (0.18) |
| ≥ 50 | 3.62 (0.09) | 8.08 (0.18) | 7.12 (0.03) | 6.04 (0.10) | 5.86 (0.07) | 6.25 (0.03) | 6.33 (1.02) | 8.52 (0.16) |

* Adjusted by age, according to the Standard European Population.

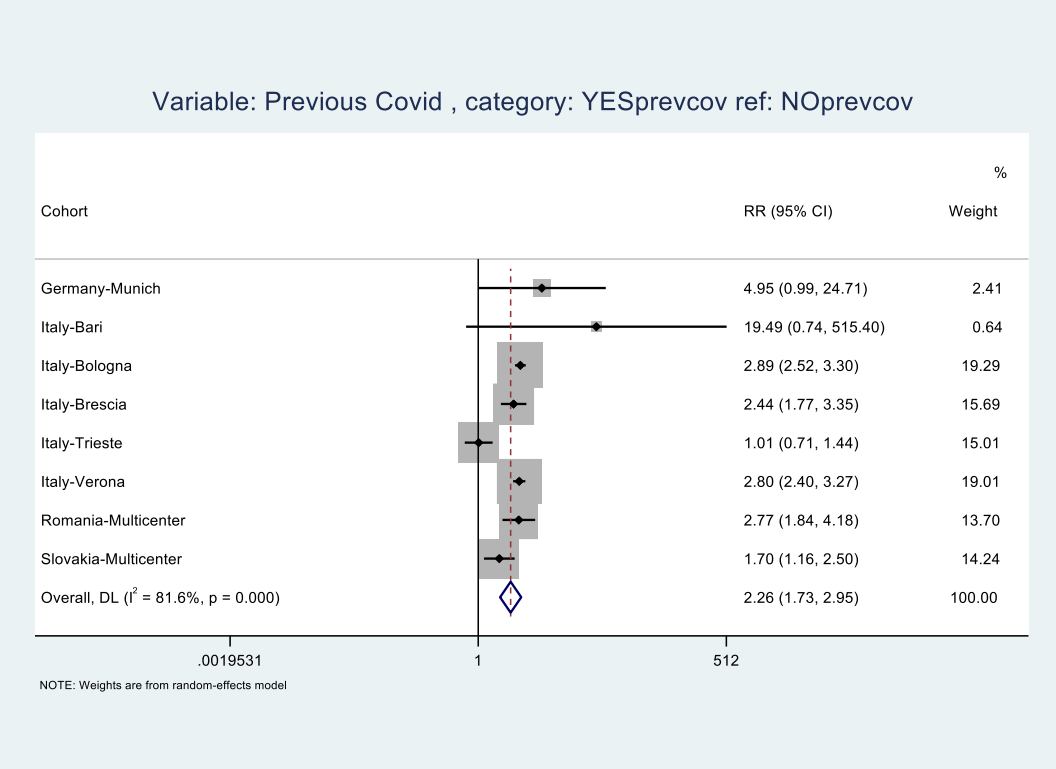
Supplementary Figure 1. Relative risks and 95% confidence intervals of one SD increased in normalized antibody level by sex; results of individual cohorts and meta-analysis



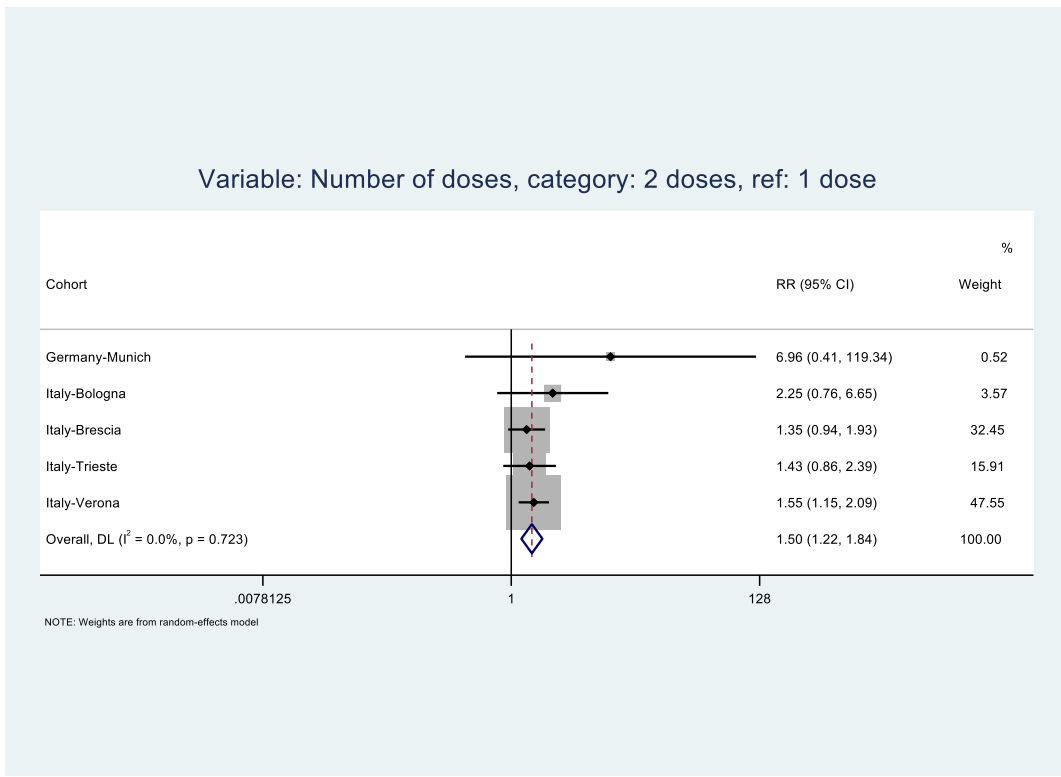
Supplementary Figure 2. Relative risks and 95% confidence intervals of one SD increased in normalized antibody level, by age; results of individual cohorts and meta-analysis.



Supplementary Figure 3. Relative risks and 95% confidence intervals of one SD increased in normalized antibody level by previous COVID infection; results of individual cohorts and meta-analysis

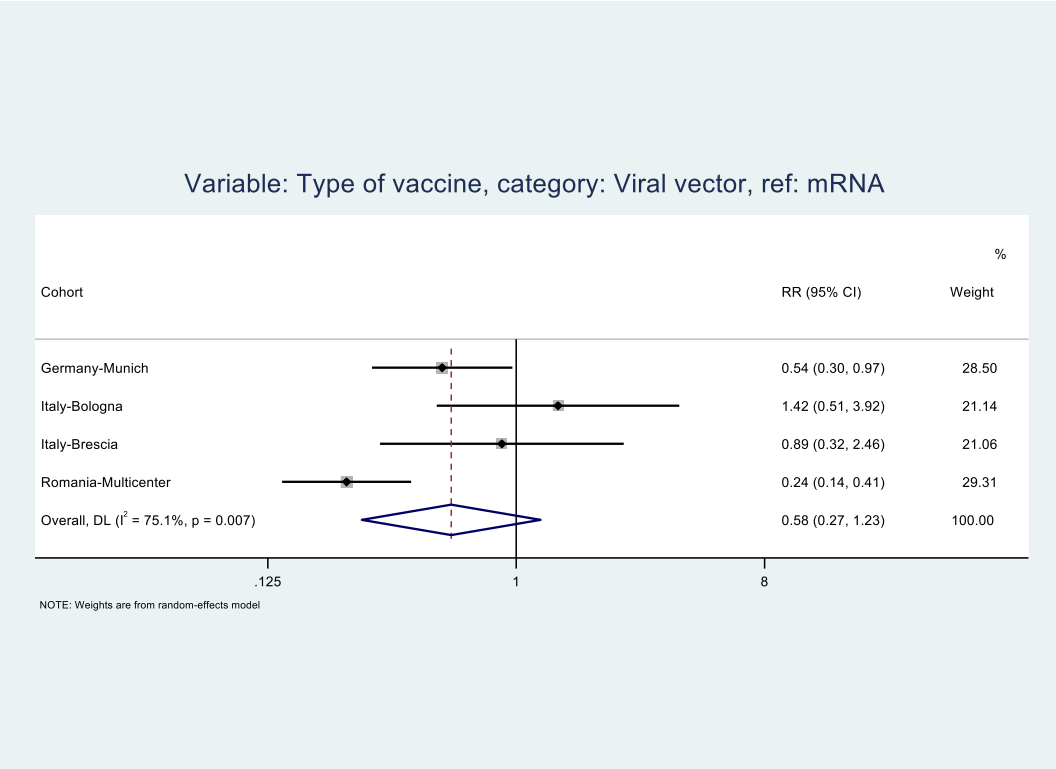


Supplementary Figure 4. RR for number of vaccine doses; results of individual cohorts and meta-analysis



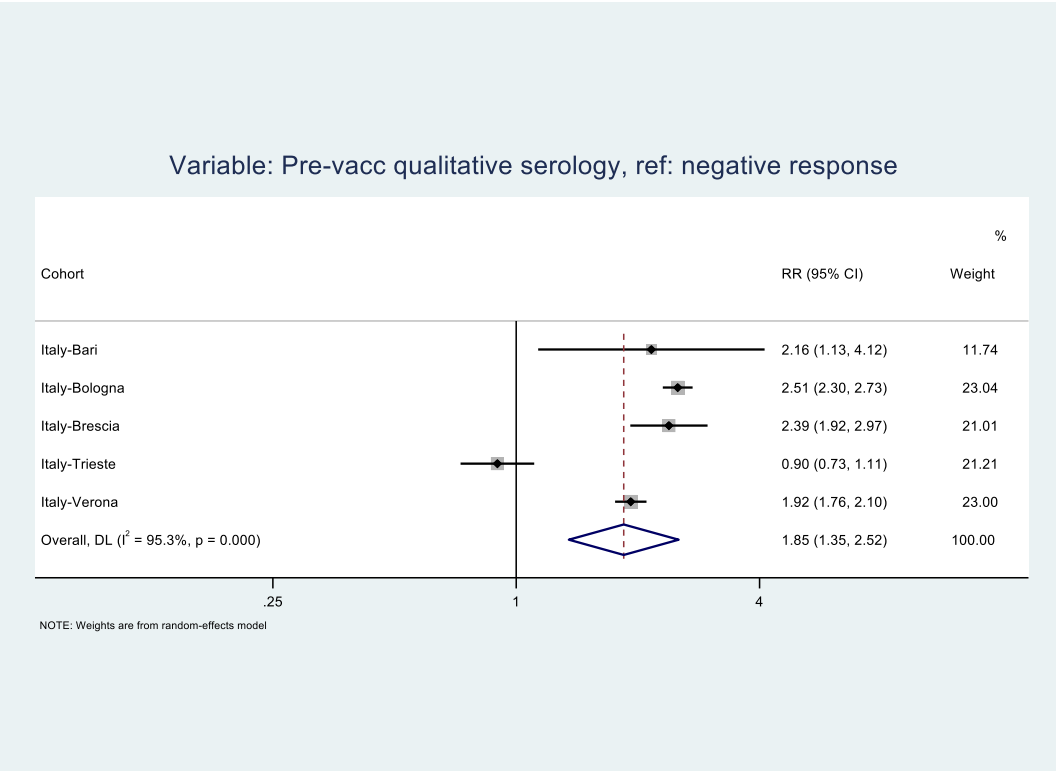
Relative risks and 95% confidence intervals of one SD increased in normalized antibody level

Supplementary Figure 5. RR for type of vaccine; results of individual cohorts and meta-analysis



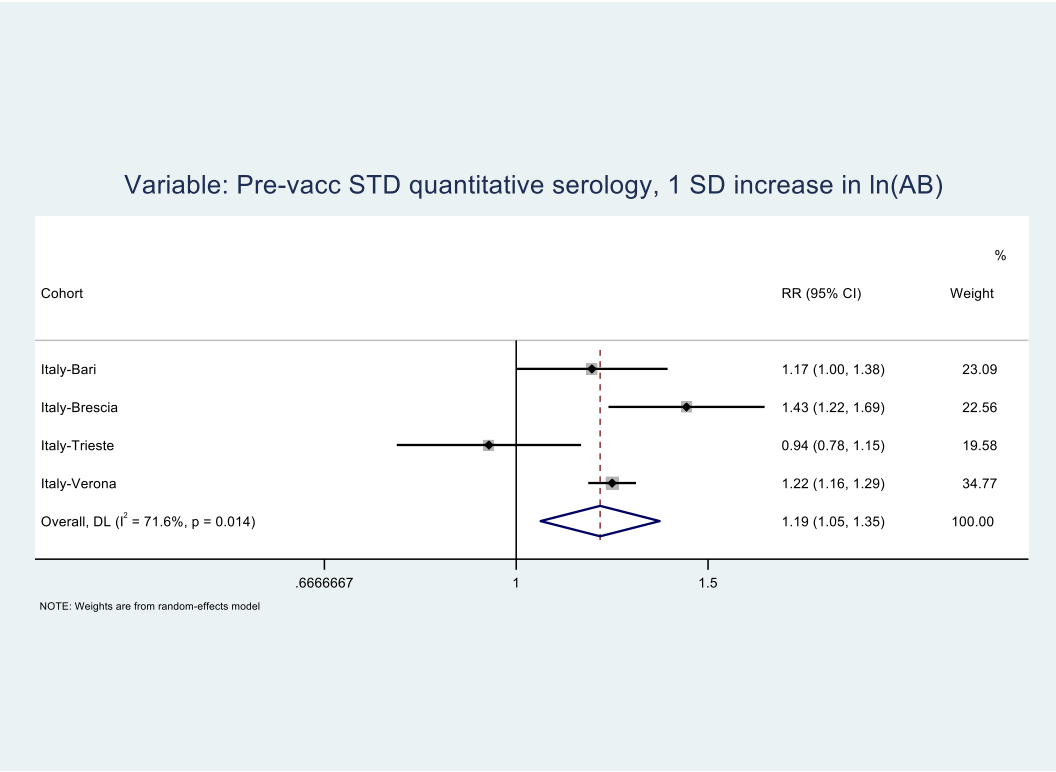
Relative risks and 95% confidence intervals of one SD increased in normalized antibody level

Supplementary Figure 6. RR for pre-vaccination serology (qualitative); results of individual cohorts and meta-analysis



Relative risks and 95% confidence intervals of one SD increased in normalized antibody level

Supplementary Figure 7. RR for pre-vaccination serology (one SD increase in normalized antibody level); results of individual cohorts and meta-analysis



Relative risks and 95% confidence intervals of one SD increased in normalized antibody level