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Supplementary information

Gut micro-organisms associated with health, nutrition and dietary interventions

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Gut microbes associated with health, nutrition and dietary interventions

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Supplementary Information Guide

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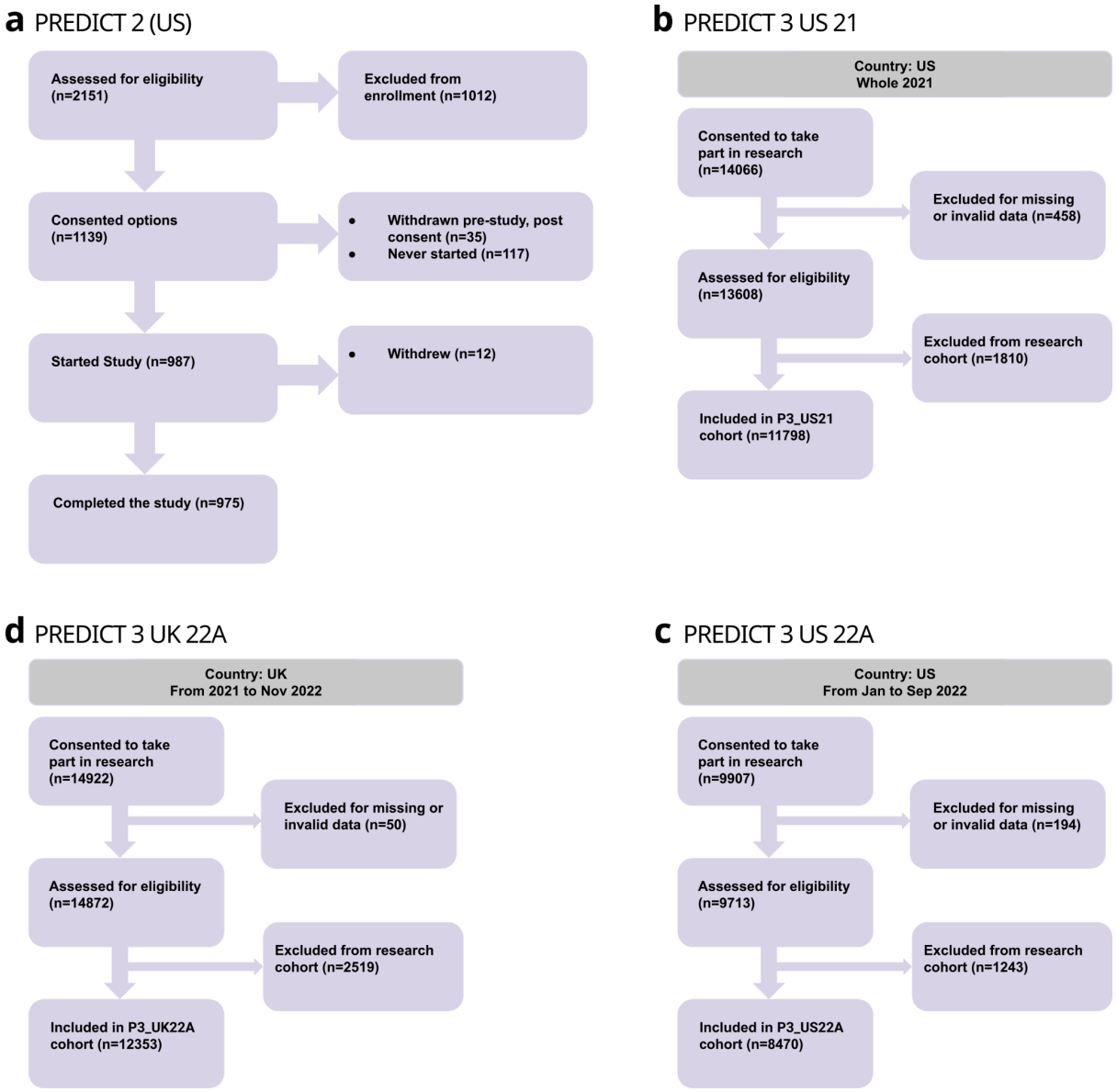
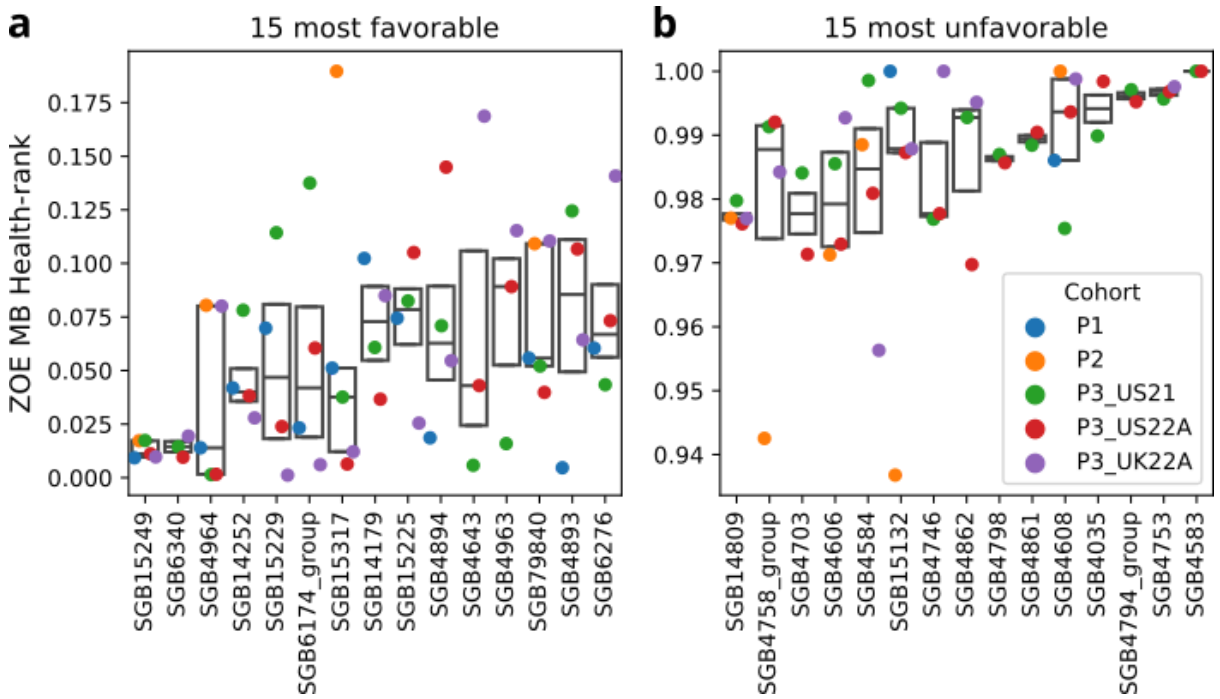
Supplementary Fig. 1



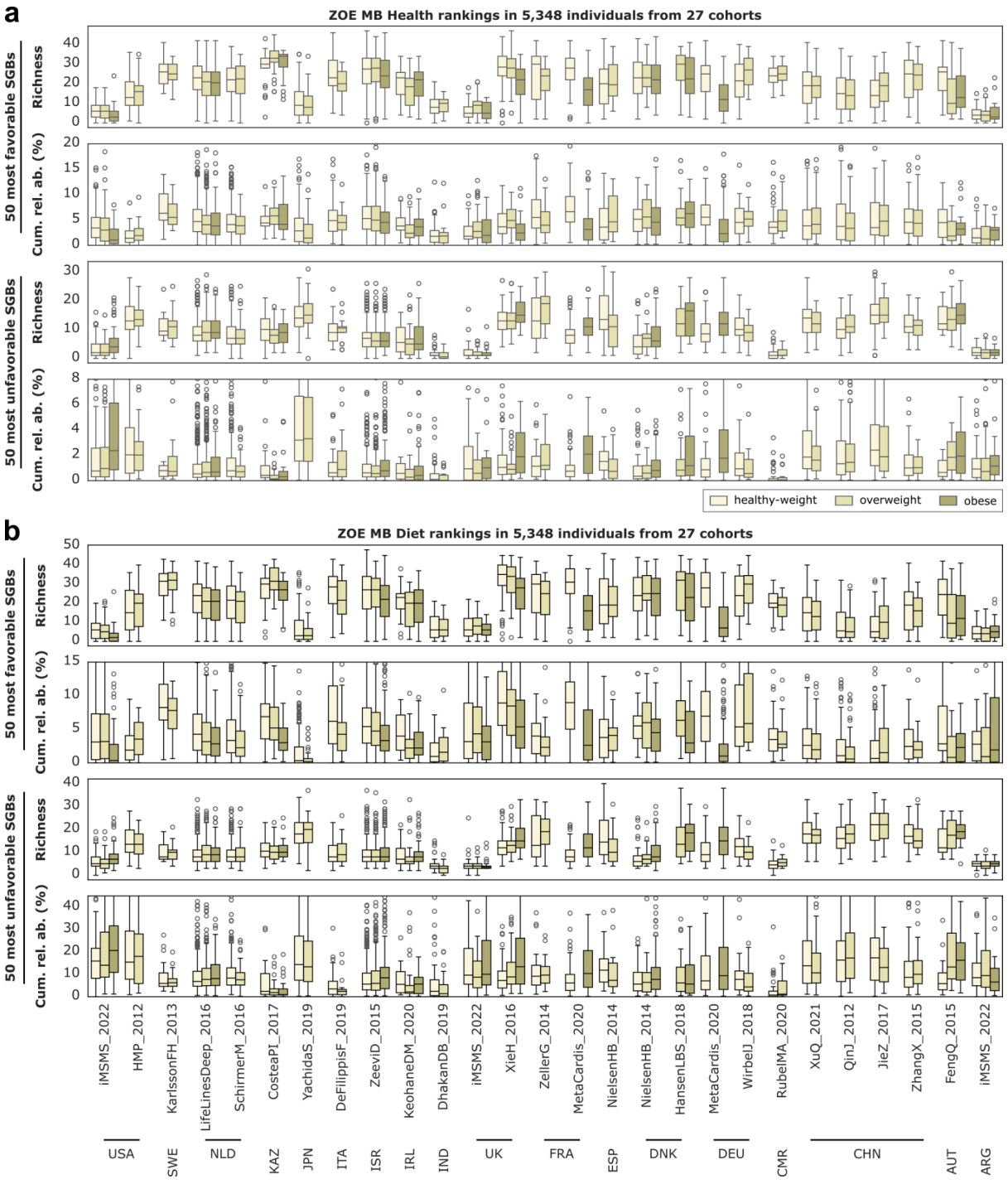
Supplementary Fig. 1. CONSORT diagrams for the ZOE cohorts. Description of the starting number of enrolled individuals in each of the new ZOE cohorts, with the details of the exclusion criteria and the number of individuals removed at each step. **a)** The PREDICT 2 cohort comprised a total of 975 individuals from the US (NCT03983733). **b-e)** The PREDICT 3 cohorts (ClinicalTrials.gov ID: NCT04735835) are composed of ZOE customers who consented for their microbiome data to be used for research purposes. **b)** The PREDICT 3 US21 cohort comprised a total of 11,798 individuals from the US. **c)** The PREDICT 3 US22A cohort comprised a total of 8,470 individuals from the US. **d)** The PREDICT 3 UK22A cohort comprised a total of 12,353 individuals from the UK.

Supplementary Fig. 2



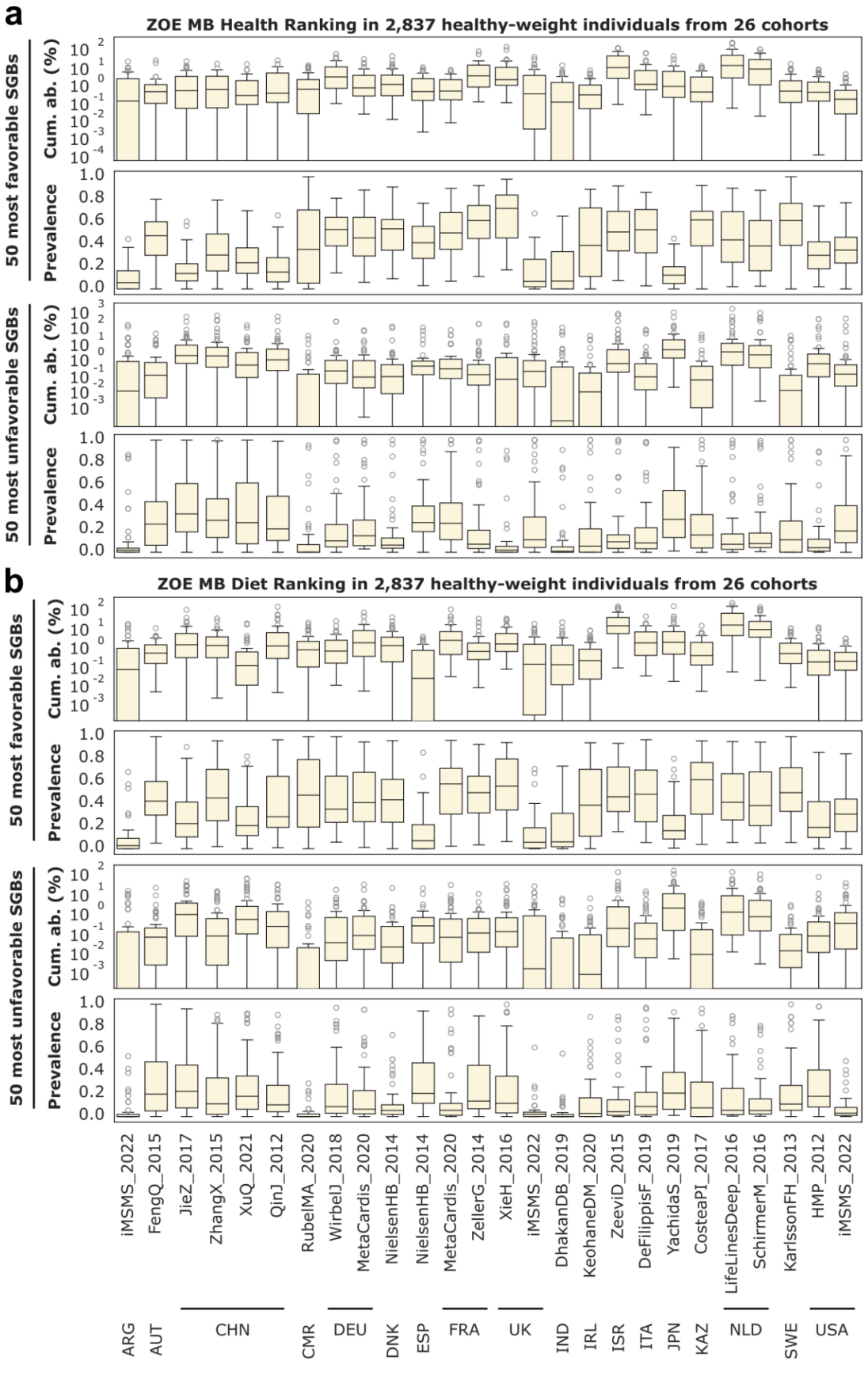
Supplementary Fig. 2. Cohort-specific distribution of ranks for the 15 most favorably and unfavorably ZME MB Health-ranked SGBs. Boxplots show the rank in the single PREDICT cohort of the fifteen most favorable (**a**) and unfavorable (**b**) ZOE MB Health-ranked SGBs (**Methods**). **a)** The 15 most favorably ranked SGBs according to the ZOE MB Health-ranks, show rank values in each PREDICT cohort consistently close to zero. **b)** On the contrary, the 15 most unfavorably ranked SGBs according to the ZOE MB Health-ranks, generally show rank values close to one in all cohorts.

Supplementary Fig. 3



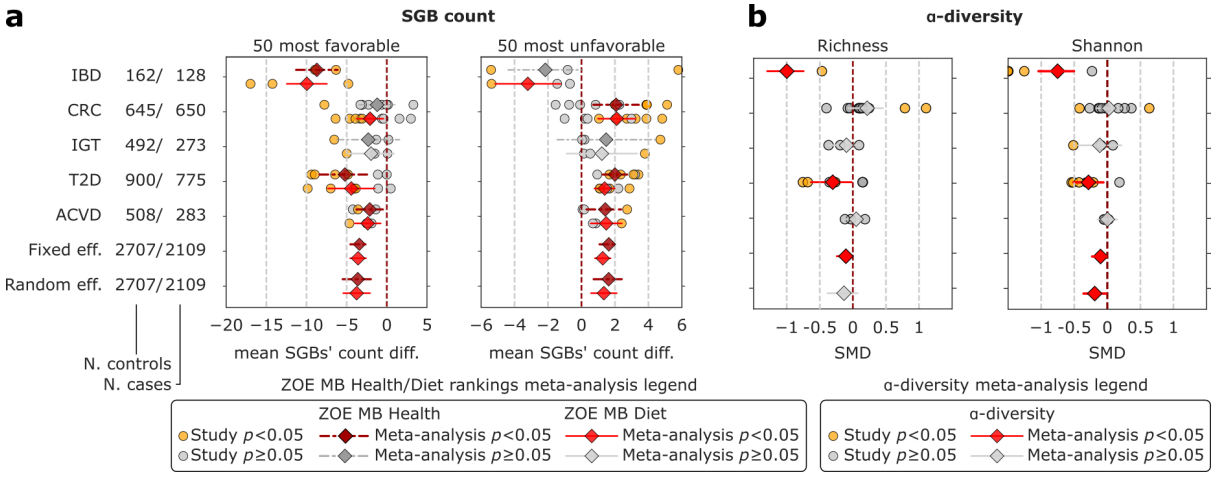
Supplementary Fig. 3. The ZOE MB Health and Diet-ranked SGBs stratify individuals according to their BMI in 27 public cohorts. The number and cumulative relative abundance of the 50 most favorably ranked SGBs from **a)** the ZOE MB Health rank and **b)** the ZOE MB Diet rank detected in individuals from 27 public datasets, showed that increasing BMI is reflected by a lower presence of favorable SGBs (top two rows). On the other hand, the 50 most unfavorably-ranked SGBs show an increasing count and cumulative abundance in higher BMI categories (bottom two rows).

Supplementary Fig. 4



Supplementary Fig. 4. The distribution of the ZOE MB Health and Diet-ranked SGBs in 2,837 healthy-weight individuals from 18 countries and 26 public cohorts. a) The distributions of the cumulative relative abundance and prevalence of the 50 most favorable (upper) and unfavorable (lower) SGBs in the ZOE MB Health rankings, showing variable distributions across datasets and countries. **b)** The cumulative relative abundance and prevalence of the 50 most favorable (upper) and unfavorable (lower) SGBs in the ZOE MB Diet rankings. The effect of sequencing depth, which can be associated with datasets and countries for both analyses, is assessed in **Supplementary Table 10**.

Supplementary Fig. 5



Supplementary Fig. 5. Meta-analyses of the 50 most favorable and unfavorable SGBs according to the ZOE MB Health and Diet-rankings across disease categories. a) Meta-analyses of the mean difference of the number of the 50 most favorable (left) and unfavorable (right) SGBs found in each sample from 25 public cohorts from five diseases (age ≥ 16 and BMI ≥ 18.5, retrieved from curatedMetagenomicData 3 [85]). Dark-red and light-red markers refer to ZOE MB Health and Diet ranks, respectively. Circles represent the mean count difference from a linear model adjusted by sex, age, and BMI. Diamonds indicate the coefficient of a random-effect meta-analysis (**Methods**). **b)** Meta-analysis on alpha-diversity (richness and Shannon's entropy) in discriminating between cases and controls. Error bars represent the 95% confidence interval.

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