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## **Supplemental Information**

### **A comprehensive analysis of the efficacy and safety of COVID-19 vaccines**

**Changjing Cai, Yinghui Peng, Edward Shen, Qiaoqiao Huang, Yihong Chen, Ping Liu, Cao Guo, Ziyang Feng, Le Gao, Xiangyang Zhang, Yan Gao, Yihan Liu, Ying Han, Shan Zeng, and Hong Shen**

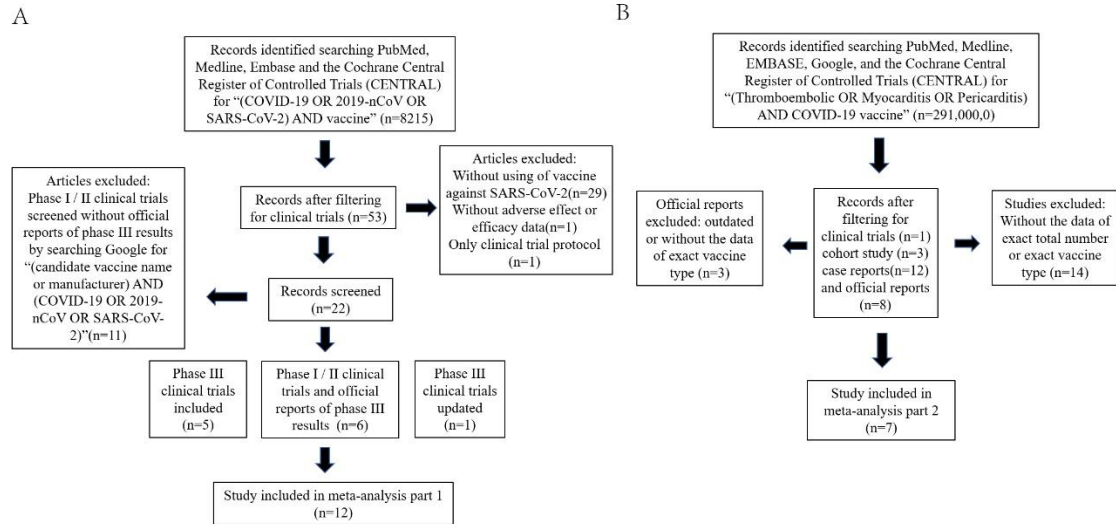


Figure S1. PRISMA diagram of articles selected for meta-analysis (A) Part 1: The landscape of efficacy and safety of COVID-19 vaccines. (B) Part 2: The severe and rare ADRs of COVID-19 vaccines.

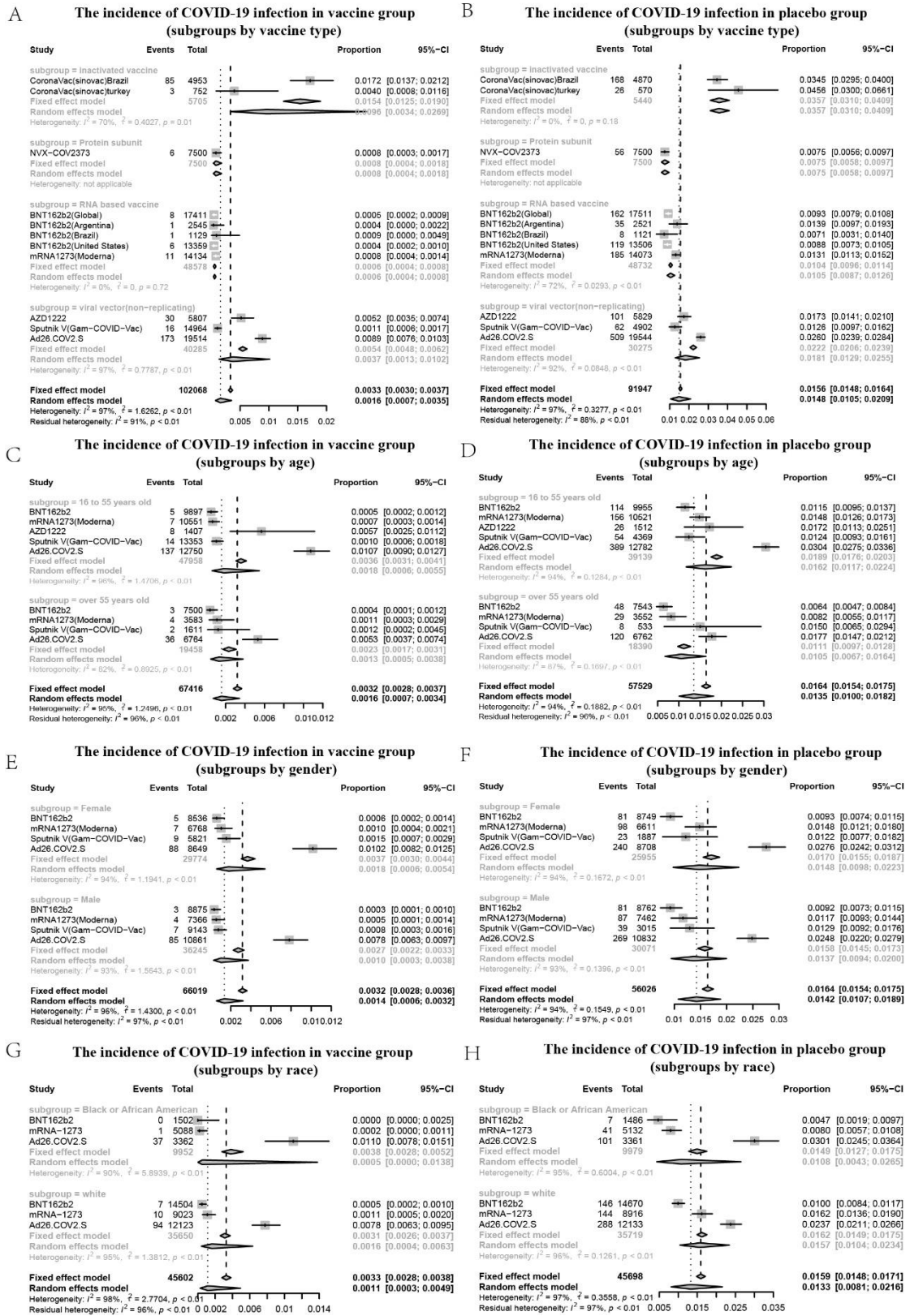


Figure S2. Forest plot of the efficacy of COVID-19 vaccine. Meta-analysis was performed using R statistical software. Event rates and their corresponding 95% confidence intervals were estimated using both a fixed-effects model and a random-effects model. (A) vaccine group stratified by vaccine type (B) placebo group stratified by vaccine type (C) vaccine group stratified by age (D)

placebo group stratified by age (E) vaccine group stratified by gender (F) placebo group stratified by gender (G) vaccine group stratified by race (H) placebo group stratified by race.

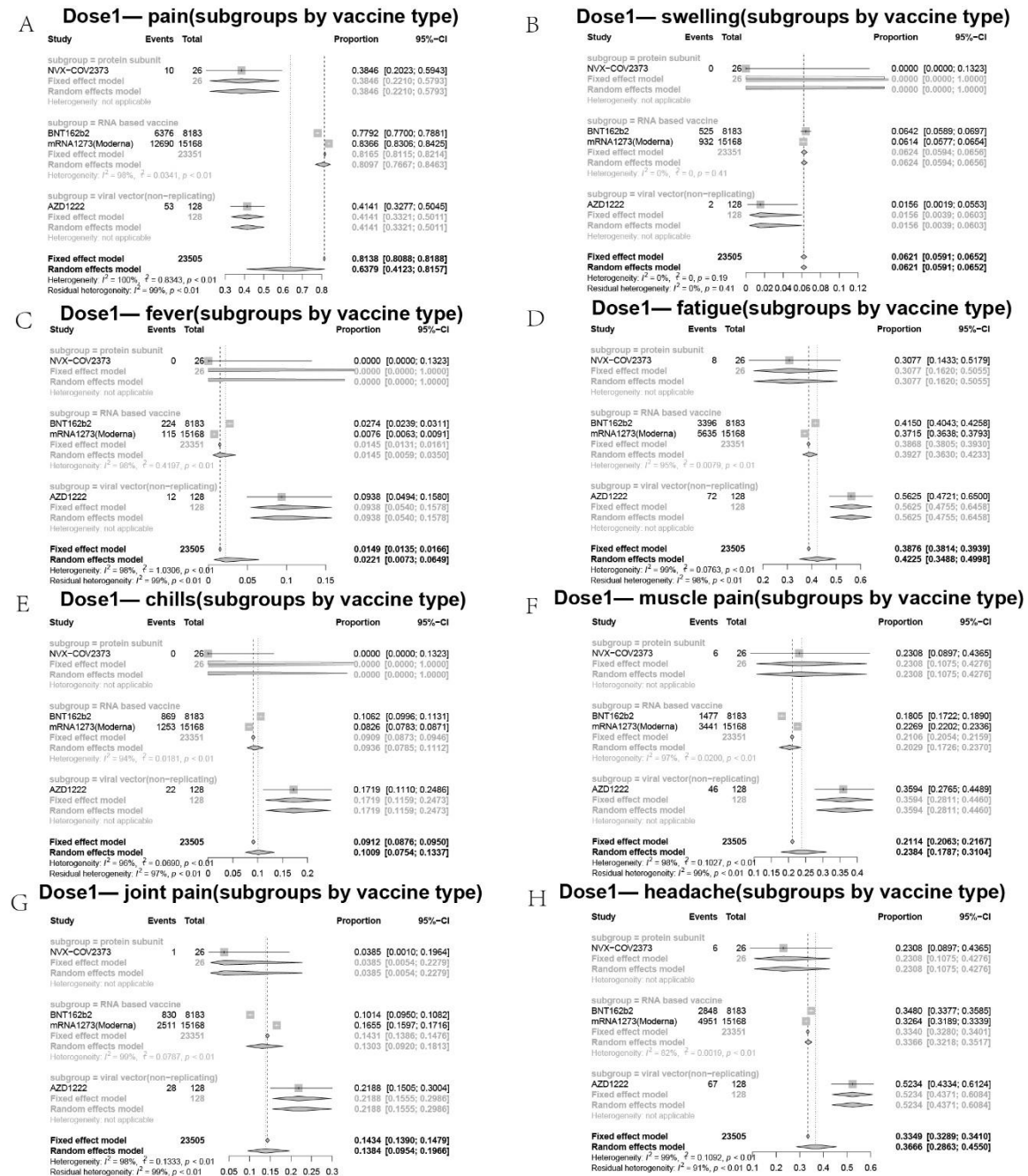


Figure S3. Forest plot of the incidence of ADRs after dose 1 (subgroups by vaccine type). Meta-analysis was performed using R statistical software. Event rates and their corresponding 95% confidence intervals were estimated using both a fixed-effects model and a random-effects model. (A) pain (B) swelling (C) fever (D) fatigue (E) chills (F) Muscle pain(myalgia) (G) Joint pain(arthralgia) (H) headache.

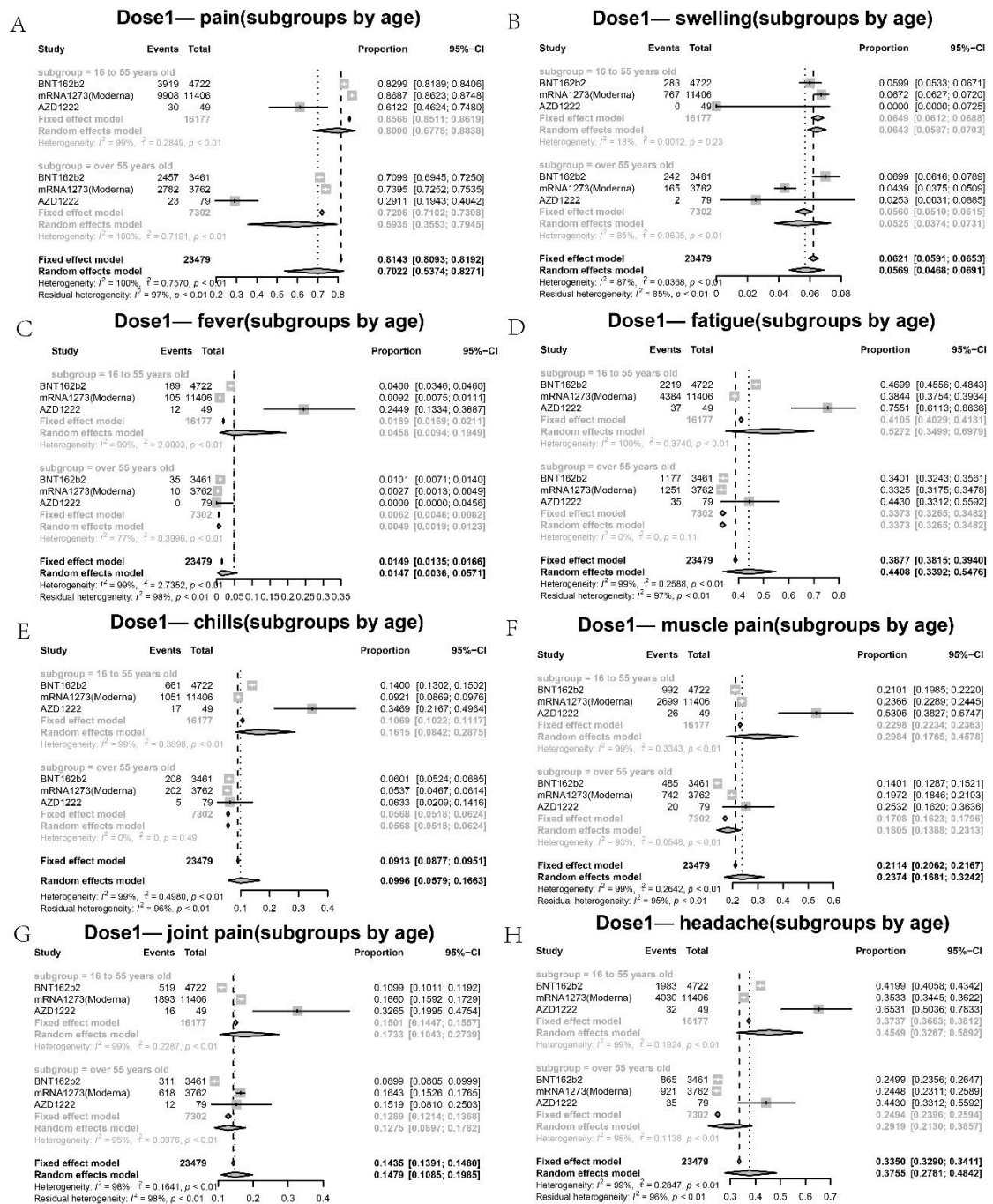


Figure S4. Forest plot of the incidence of ADRs after dose 1 (subgroups by age). Meta-analysis was performed using R statistical software. Event rates and their corresponding 95% confidence intervals were estimated using both a fixed-effects model and a random-effects model. (A) pain (B) swelling (C) fever (D) fatigue (E) chills (F) Muscle pain(myalgia) (G) Joint pain(arthralgia) (H) headache.

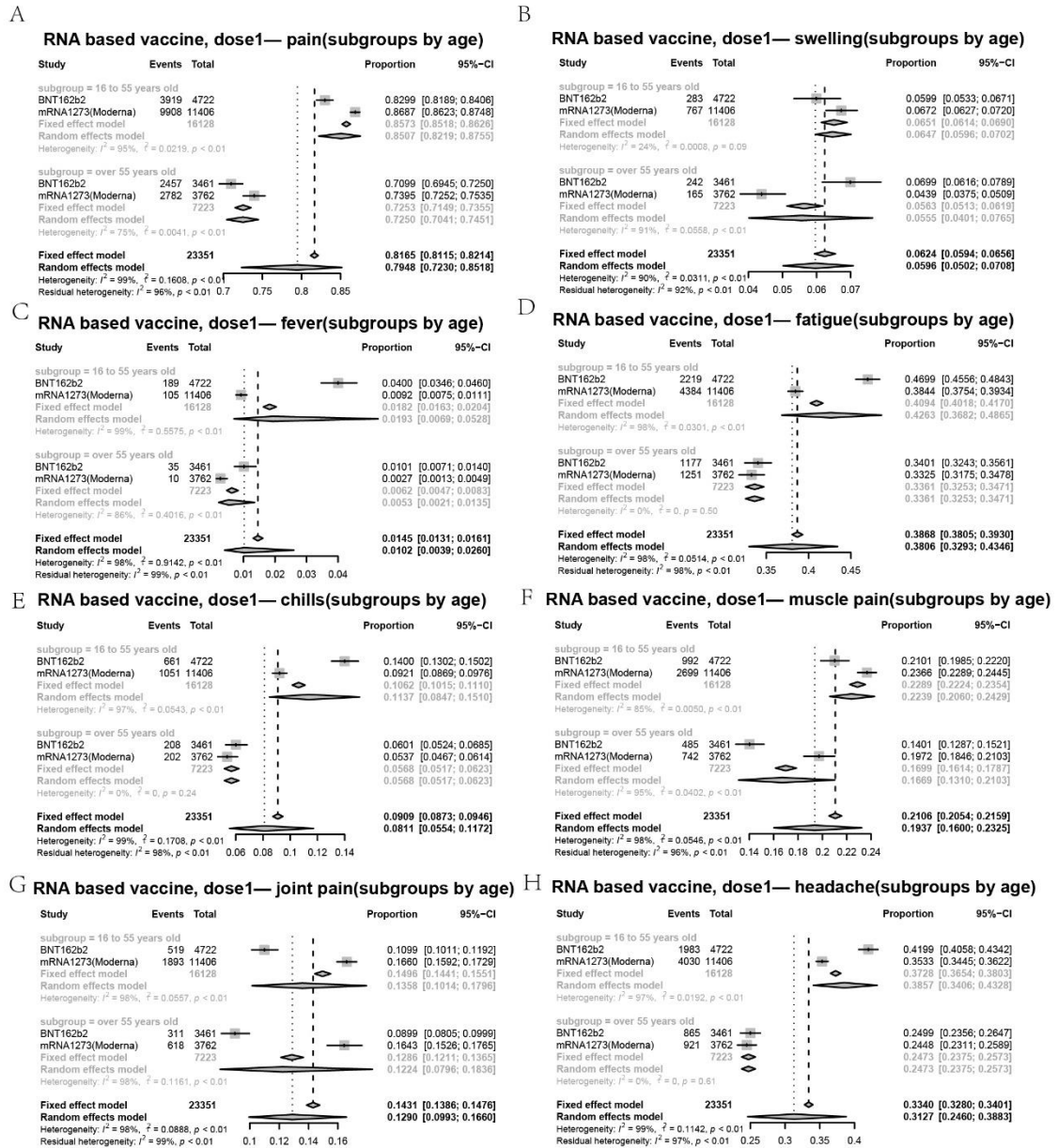


Figure S5. Forest plot of the incidence of ADRs of RNA-based vaccines after dose 1 (subgroups by age). Meta-analysis was performed using R statistical software. Event rates and their corresponding 95% confidence intervals were estimated using both a fixed-effects model and a random-effects model. (A) pain (B) swelling (C) fever (D) fatigue (E) chills (F) Muscle pain(myalgia) (G) Joint pain(arthralgia) (H) headache.

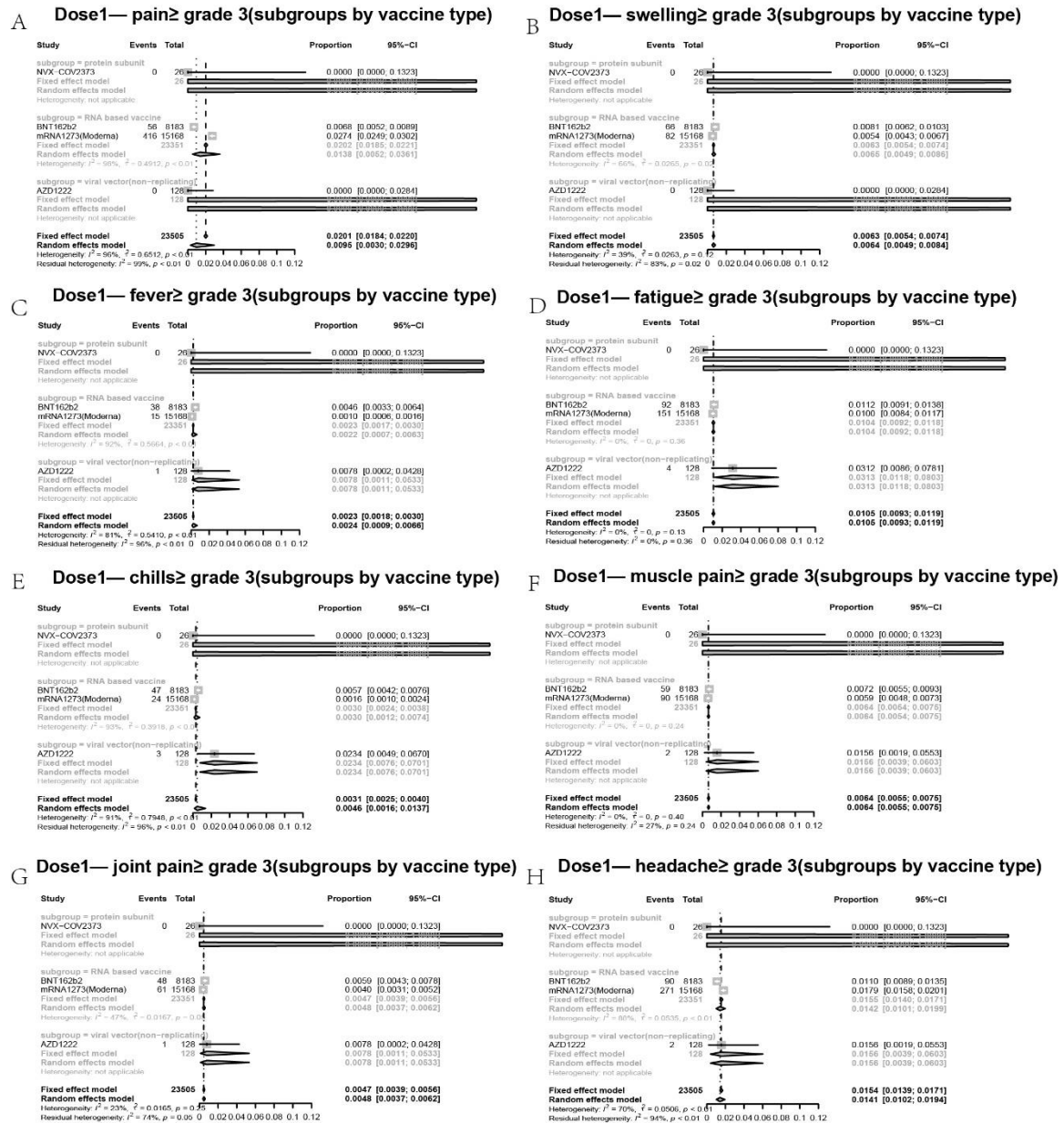


Figure S6. Forest plot of the incidence of ADRs over grade 3 after dose 1 (subgroups by vaccine type). Meta-analysis was performed using R statistical software. Event rates and their corresponding 95% confidence intervals were estimated using both a fixed-effects model and a random-effects model. (A) pain (B) swelling (C) fever (D) fatigue (E) chills (F) Muscle pain(myalgia) (G) Joint pain(arthralgia) (H) headache.





Figure S7. Forest plot of the incidence of ADRs after dose 2 (subgroups by vaccine type). Meta-analysis was performed using R statistical software. Event rates and their corresponding 95% confidence intervals were estimated using both a fixed-effects model and a random-effects model. (A) pain (B) swelling (C) fever (D) fatigue (E) chills (F) Muscle pain(myalgia) (G) Joint pain(arthralgia) (H) headache.

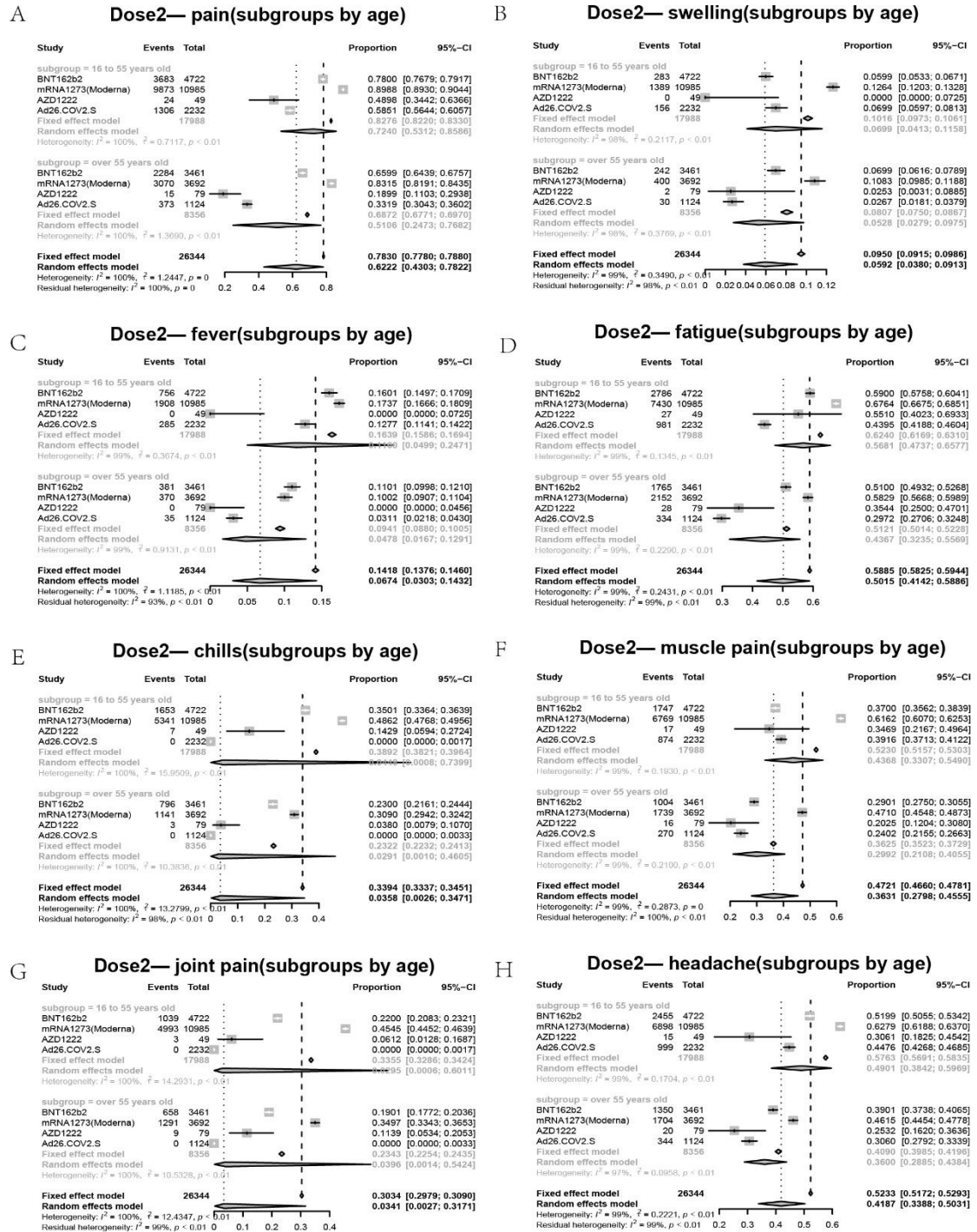


Figure S8. Forest plot of the incidence of ADRs after dose 2 (subgroups by age). Meta-analysis was performed using R statistical software. Event rates and their corresponding 95% confidence intervals were estimated using both a fixed-effects model and a random-effects model. (A) pain (B) swelling (C) fever (D) fatigue (E) chills (F) Muscle pain(myalgia) (G) Joint pain(arthralgia) (H) headache.

swelling (C) fever (D) fatigue (E) chills (F) Muscle pain(myalgia) (G) Joint pain(arthralgia) (H) headache.



Figure S9. Forest plot of the incidence of ADRs of RNA-based vaccines after dose 2 (subgroups by age). Meta-analysis was performed using R statistical software. Event rates and their corresponding 95% confidence intervals were estimated using both a fixed-effects model and a random-effects model. (A) pain (B) swelling (C) fever (D) fatigue (E) chills (F) Muscle pain(myalgia) (G) Joint pain(arthralgia) (H) headache.

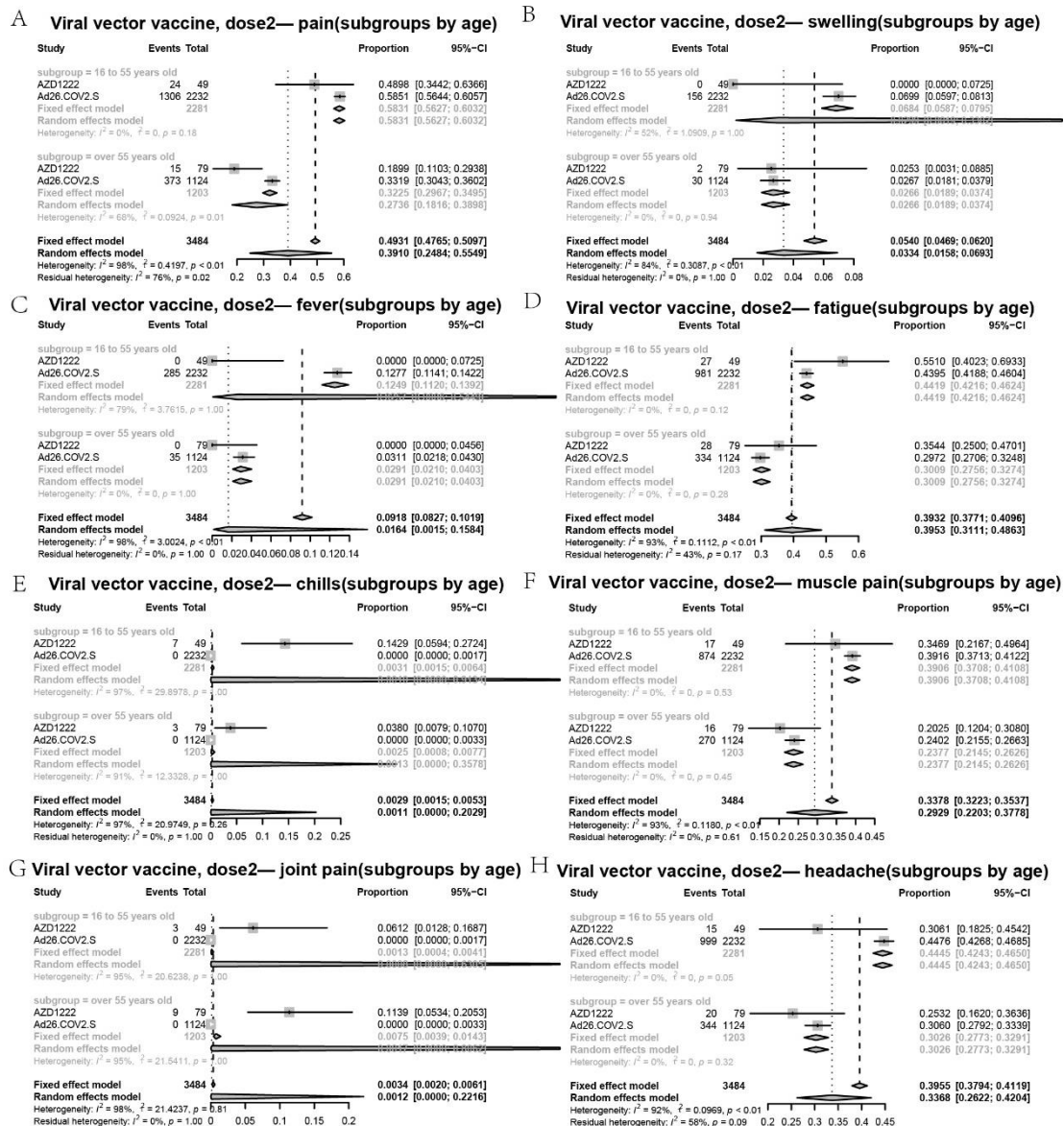


Figure S10. Forest plot of the incidence of ADRs of viral vector (non-replicating) vaccines after dose 2 (subgroups by age). Meta-analysis was performed using R statistical software. Event rates and their corresponding 95% confidence intervals were estimated using both a fixed-effects model and a random-effects model. (A) pain (B) swelling (C) fever (D) fatigue (E) chills (F) Muscle pain(myalgia) (G) Joint pain(arthralgia) (H) headache.

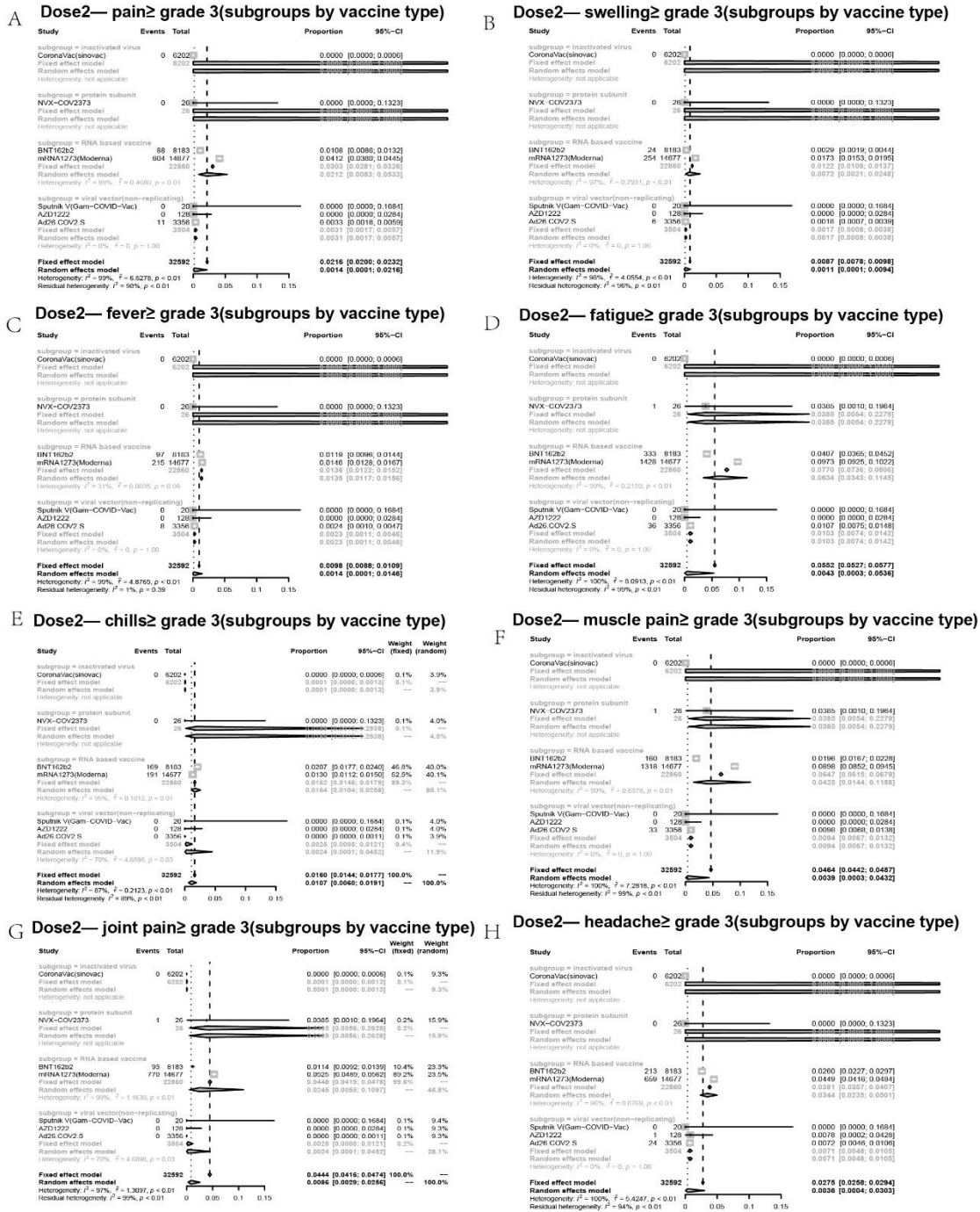


Figure S11. Forest plot of the incidence of ADRs over grade 3 after dose 2 (subgroups by vaccine type). Meta-analysis was performed using R statistical software. Event rates and their corresponding 95% confidence intervals were estimated using both a fixed-effects model and a random-effects model. (A) pain (B) swelling (C) fever (D) fatigue (E) chills (F) Muscle pain(myalgia) (G) Joint pain(arthralgia) (H) headache.

Table S1. Vaccine Efficacy of COVID-19 vaccines

Table S2. List of ADRs of COVID-19 vaccines in meta-analysis

Table S3. Characteristics of severe and rare ADRs of COVID-19

Table S4. The clinical characteristics of VAERS

Table S5. The incidence of ADRs of COVID-19 vaccine in VAERS (Heatmap)

Table S6. The incidence of ADRs of COVID-19 vaccine in VAERS (subgroups by vaccine type)

Table S7. The incidence of ADRs of MODERNA vaccine in VAERS (subgroups by age)

Table S8. The incidence of ADRs of PFIZER-BIONTECH vaccine in VAERS (subgroups by age)

Table S9. The incidence of ADRs of MODERNA vaccine in VAERS (subgroups by gender)

Table S10. The incidence of ADRs of PFIZER-BIONTECH vaccine in VAERS (subgroups by gender)