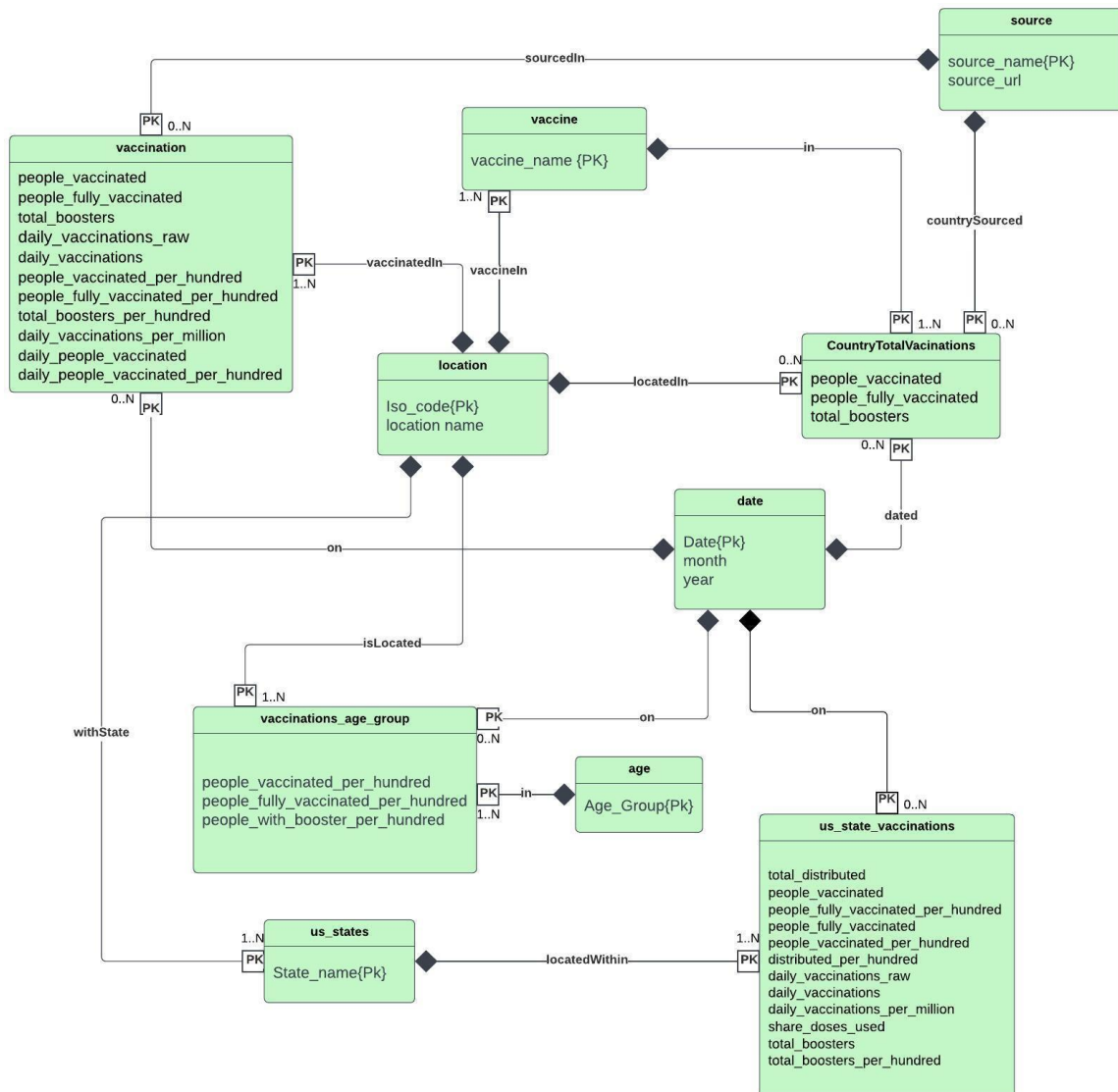


## Database Design Project

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**ER Diagram:**



## Normalisation:

Locations (location, iso\_code, vaccines[1..N], last\_observation\_date, source\_name, source\_website) 1NF

⇒ Vaccine (vaccine\_name, iso\_code\*) 3NF

Location (iso\_code, location, source\_name, source\_website) 2NF

⇒ Location(iso\_code, location\_name) 3NF

⇒ Source (source\_name, source\_url) 3NF

⇒ Date (date, month, year) 3NF

Vaccination\_by\_age\_group (location, date, age, people\_vaccinated\_per\_hundred, people\_fully\_vaccinated\_per\_hundred, people\_with\_booster\_per\_hundred) 3NF

- Location has been replaced with the corresponding iso\_codes in the following tables and also the derivable and derivable variables also have been removed.

Vaccination\_by\_age\_group (iso\_code\*, date\*, age\_group\*, people\_vaccinated\_per\_hundred, people\_fully\_vaccinated\_per\_hundred, people\_with\_booster\_per\_hundred) 3NF

Age(age\_group) 3NF

Vaccination(iso\_code\*, date\*, people\_vaccinated, people\_fully\_vaccinated, total\_boosters, daily\_vaccinations\_raw, daily\_vaccinations, people\_vaccinated\_per\_hundred, people\_fully\_vaccinated\_per\_hundred, total\_boosters\_per\_hundred, daily\_vaccinations\_per\_million, daily\_people\_vaccinated, daily\_people\_vaccinated\_per\_hundred) 3NF

Vaccination\_by\_manufacturer (iso\_code\*, date\*, vaccine\_name\*, total\_vaccinations) 3NF

- The vaccinations of Australia, England, USA and Newzealand have been taken in a single entity containing details of all these countries as CountryTotalVaccinations.

CountryTotalVaccinations(iso\_code\*, date\*, vaccine\_name\*, source\_name, people\_vaccinated, people\_fully\_vaccinated, total\_boosters) 3NF

Us\_state\_vaccinations(location, date\*, total\_distributed, people\_vaccinated, people\_fully\_vaccinated\_per\_hundred, people\_fully\_vaccinated, people\_vaccinated\_per\_hundred, distributed\_per\_hundred, daily\_vaccinations\_raw, daily\_vaccinations, daily\_vaccinations\_per\_million, share\_doses\_used, total\_boosters, total\_boosters\_per\_hundred) 3NF

- Inorder to link this entity with other entities, iso\_code as USA attribute has been added.

Us\_states (iso\_code\*, state\_name) 3NF

us\_state\_vaccinations(iso\_code\*, state\_name\*, date\*, total\_distributed, people\_vaccinated, people\_fully\_vaccinated\_per\_hundred, people\_fully\_vaccinated, people\_vaccinated\_per\_hundred, distributed\_per\_hundred, daily\_vaccinations\_raw, daily\_vaccinations, daily\_vaccinations\_per\_million, share\_doses\_used, total\_boosters, total\_boosters\_per\_hundred) 3NF

### Final Schema:

1. Vaccine (vaccine\_name, iso\_code\*) 3NF
2. Location(iso\_code, location\_name) 3NF
3. Source (source\_name, source\_url) 3NF
4. Date (date, month, year) 3NF
5. Vaccination\_by\_age\_group (iso\_code\*, date\*, age\_group\*, people\_vaccinated\_per\_hundred, people\_fully\_vaccinated\_per\_hundred, people\_with\_booster\_per\_hundred) 3NF
6. Age(age\_group) 3NF
7. Vaccination(iso\_code\*, date\*, people\_vaccinated, people\_fully\_vaccinated, total\_boosters, daily\_vaccinations\_raw, daily\_vaccinations, people\_vaccinated\_per\_hundred, people\_fully\_vaccinated\_per\_hundred, total\_boosters\_per\_hundred, daily\_vaccinations\_per\_million, daily\_people\_vaccinated, daily\_people\_vaccinated\_per\_hundred) 3NF
8. Vaccination\_by\_manufacturer (iso\_code\*, date\*, vaccine\_name\*, total\_vaccinations) 3NF
9. CountryTotalVaccinations(iso\_code\*, date\*, vaccine\_name\*, source\_name, people\_vaccinated, people\_fully\_vaccinated, total\_boosters) 3NF
10. Us\_states (iso\_code\*, state\_name) 3NF
11. 11. us\_state\_vaccinations (iso\_code\*, state\_name\*, date\*, total\_distributed, people\_vaccinated, people\_fully\_vaccinated\_per\_hundred, people\_fully\_vaccinated, people\_vaccinated\_per\_hundred, distributed\_per\_hundred, daily\_vaccinations\_raw, daily\_vaccinations, daily\_vaccinations\_per\_million, share\_doses\_used, total\_boosters, total\_boosters\_per\_hundred) 3NF

### Merged Final Schema:

1. Vaccine (vaccine\_name, iso\_code\*) 3NF
2. Location(iso\_code, location\_name) 3NF
3. Source (source\_name, source\_url) 3NF
4. Date (date, month, year) 3NF
5. Vaccination\_by\_age\_group (iso\_code\*, date\*, age\_group\*,  
people\_vaccinated\_per\_hundred, people\_fully\_vaccinated\_per\_hundred,  
people\_with\_booster\_per\_hundred) 3NF
6. Age(age\_group) 3NF
7. Vaccination(iso\_code\*, date\*, people\_vaccinated, people\_fully\_vaccinated, total\_boosters, daily\_vaccinations\_raw, daily\_vaccinations, people\_vaccinated\_per\_hundred, people\_fully\_vaccinated\_per\_hundred, total\_boosters\_per\_hundred, daily\_vaccinations\_per\_million, daily\_people\_vaccinated, daily\_people\_vaccinated\_per\_hundred) 3NF
8. CountryTotalVaccinations(iso\_code\*, date\*, vaccine\_name\*, source\_name,  
people\_vaccinated, people\_fully\_vaccinated, total\_boosters) 3NF
9. Us\_states (iso\_code\*, state\_name) 3NF
10. us\_state\_vaccinations (iso\_code\*, state\_name\*,  
date\*, total\_distributed, people\_vaccinated, people\_fully\_vaccinated\_per\_hundred, people\_fully\_vaccinated, people\_vaccinated\_per\_hundred, distributed\_per\_hundred, daily\_vaccinations\_raw, daily\_vaccinations, daily\_vaccinations\_per\_million, share\_doses\_used, total\_boosters, total\_boosters\_per\_hundred) 3NF

References:

‘SQL Server COALESCE() Function’, viewed 10 June 2023,  
<[https://www.w3schools.com/sql/func\\_sqlserver\\_coalesce.asp](https://www.w3schools.com/sql/func_sqlserver_coalesce.asp)>.

‘covid-19-data/public/data/vaccinations at master · ovid/covid-19-data’ *GitHub*, viewed 10 June 2023, <<https://github.com/ovid/covid-19-data>>.

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