Report for EER DIAGRAM:

Considered MANUFACTURER, FEDERAL, STATES, VACCINE, PATIENT and LOCAL_BODIES which has disjoint relation to entities HEALTH_CARE_CENTERS, VACCINATION_CAMPS and LABS_AND_PHARMACIES.

ENTITY: FEDERAL

Attribute: Fname which is the Federal name (Primary Key).

Primary Key: **Fname**

Relation: Supplies_To.

The doses received from manufacturer has to be supplied and state must receive supplies hence total participation and as there is only 1 federal that can supply to many states hence 1: N relation.

ENTITY: VACCINE

Attribute: **Vac_Type** which is the Vaccine Type e.g., Whole Virus, Protein subunit etc, **Date_Shipped**, **Mname** which is the manufacturer name e.g., Covaxin, Johnson and Johnson (are Primary Keys), NumDoses_Shipped, Proc_Count which is the number of vaccines procured by the manufacturer. The attributes are added as we require the date and doses shipped to Federal Government by the manufacturer.

Primary Keys: **Vac_Type**, **Date_Shipped**, **Mname**

Relation: Administered_On

Has attribute Date_Administered as it shows the date of the vaccine administered on a patient. We have 1: N relation as a vaccine can be administered on many patients but not all vaccines are administered as there could be few vaccines which are not administered hence partial participation, but all patients must be administered and hence total participation.

Relation: Shipped_To

As every manufacturer must ship the doses hence total participation and the Federal body has to receive the doses. Since only 1 federal body is there which can receive doses from many manufacturers the relation is 1: N.

Relation: Have

Attributes are No_Of_Doses and Date_Received. This indicates that the local bodies received some no_of_doses from the state on a particular date. The relation is M: N as every local body can have many vaccines and a particular vaccine can be at many local bodies. The participation is total because all vaccines would have to be at the local bodies and all local bodies would have vaccines.

ENTITY: PATIENT

Attribute: **Id_Num** which is the identity number of a patient (Primary Key), Name, Contact, Age, Address, Adv_Effects which is adverse effects to take care of any unwanted reactions within 15 minutes from the time of administration, Allergies which is multivalued as a patient can have many allergies, Vac_Phase which are the various vaccination phases, Med_Condition which is multivalued as a patient can have many conditions, Occupation which is considered because we need to know if the patient falls in the wrong vaccination phase, Type**_of_Dose(**(1) or (2)).

Primary Key: Id_Num, Type_Of_Dose. We considered Type_Of_Dose as primary key because a patient with 1 Id_Num can only receive Dose 1 and Dose 2 but not more than one of either of the doses.

Relation: Administers.

We added this to find the date-wise doses administered by Local Bodies. The relation is 1: N as any 1 local body can administer many patients but a patient can be administered by only 1 local body. The participation of patient is total because all patients must be administered and participation of local bodies is partial because not every local body needs to administer.

ENTITY: STATES

Attributes: No_Of_Doses which is the number of doses received from the federal body, **SName** which is State Name, SPopulation which is the state population. We considered SPopulation as we need to find daily progress per million population for state which can be retrieved from patient table when we do a date-wise count and divide it by Spopulation. Cumulative progress would be considered monthly.

Primary Key: **SName**

Relation: Distributes_To.

All the States must distribute, and all the local bodies must receive the doses and hence total participation. The relation is 1: N as local bodies receive from 1 state and state distributes to many local bodies.

ENTITY: LOCAL_BODIES

Attributes: **County**, **Zipcode** (are Primary Keys) and Lpopulation which is the local population according to one zipcode.

Disjoint Classes

Total participation as every local body must be either health_care_centers or vaccination_camps or labs_and_pharmacies for 1 zipcode.

ENTITY: HEALTH_CARE_CENTERS

Attributes: Name, Type which could be hospitals, long-term-care-facilities

ENTITY: VACCINATION_CAMPS

Attributes: Location

ENTITY: LABS_AND_PHARMACIES

Attributes: Name which could be Walgreens, CVS, Walmart, Lab_Name and Type would be either lab or pharmacy