**Four local physical locations: four offices for processing immunization records of children.**

Bronx

Manhattan

Queens

Brooklyn

**Records about immunization of children from the Bronx, Manhattan,**

**And Queens are processed in offices in each of these boroughs; records of children**

P1: city= ‘Bronx’

P2: city= ‘Manhattan’

P3: city= ‘Queens’

**Brooklyn and Staten Island are processed in the Brooklyn office.**

P4: city= ‘Brooklyn’ or ‘Staten Island’

**The office in Brooklyn supports the local immunization information**

Immunization table can go with Brooklyn fragment

**Brooklyn produces weekly reports about the immunization events of a particular type for all children in New York.**

Maybe create a view for Brooklyn to see all children of NY or skip this user requirement

**Brooklyn office also maintains (updates, deletes, inserts) the data about immunizations**

Brooklyn should be a master of the Immunization Table

**The database users in local offices can retrieve and modify all local data, but cannot access data of other offices.**

**Each office supports the data for local children and their immunization events.**

Primary Fragmentation: Child

Derived Fragmentation: Immunization\_Events

Replication Immunization

**The office daily processes several thousand requests for immunization events of a local children**

**A group of database users in Brooklyn can retrieve data about all children and their immunization events.**

1. Write Predicates based on an attribute

P1: city= ‘Bronx’

P2: city= ‘Manhattan’

P3: city= ‘Queens’

P4: city= ‘Brooklyn’ or ‘Staten Island’

1. **Distribute the attribute the Primary Way**

Child1= σ location= ‘Bronx’ (Child)

Child2= σ location= ‘Queens’ (Child)

Child3= σ location= ‘Manhattan’ (Child)

Child4= σ location= ‘Brooklyn’ or ‘Staten Island’ (Child)

1. **Immunization\_Events fragmented the Derived Way**

**Immunization\_Events Table is a child of the parent Child Table**

Immunization\_Events 1 = IE **⋉** Child1

Immunization\_Events 2 = IE **⋉** Child2

Immunization\_Events 3 = IE **⋉** Child3

Immunization\_Events 4 = IE **⋉** Child4

1. How to go back to the full table

Child = Child1  ᴗ Child2 ᴗChild3 ᴗChild4

Immunization\_Events = Immunization\_Events 1  ᴗ Immunization\_Events 2 ᴗImmunization\_Events 3 ᴗImmunization\_Events 4

1. Diagram of Horizontal Fragmentation

Bronx Queens Manhattan Brooklyn

Immunization(replica)

(re

Immunization(replica)

(re

Immunization(replica)

(re

Immunization

Immunization\_Events 4

Immunization\_Events 3

Immunization\_Events 2

Immunization\_Events 1

Child2

Child1

Child3

Child4