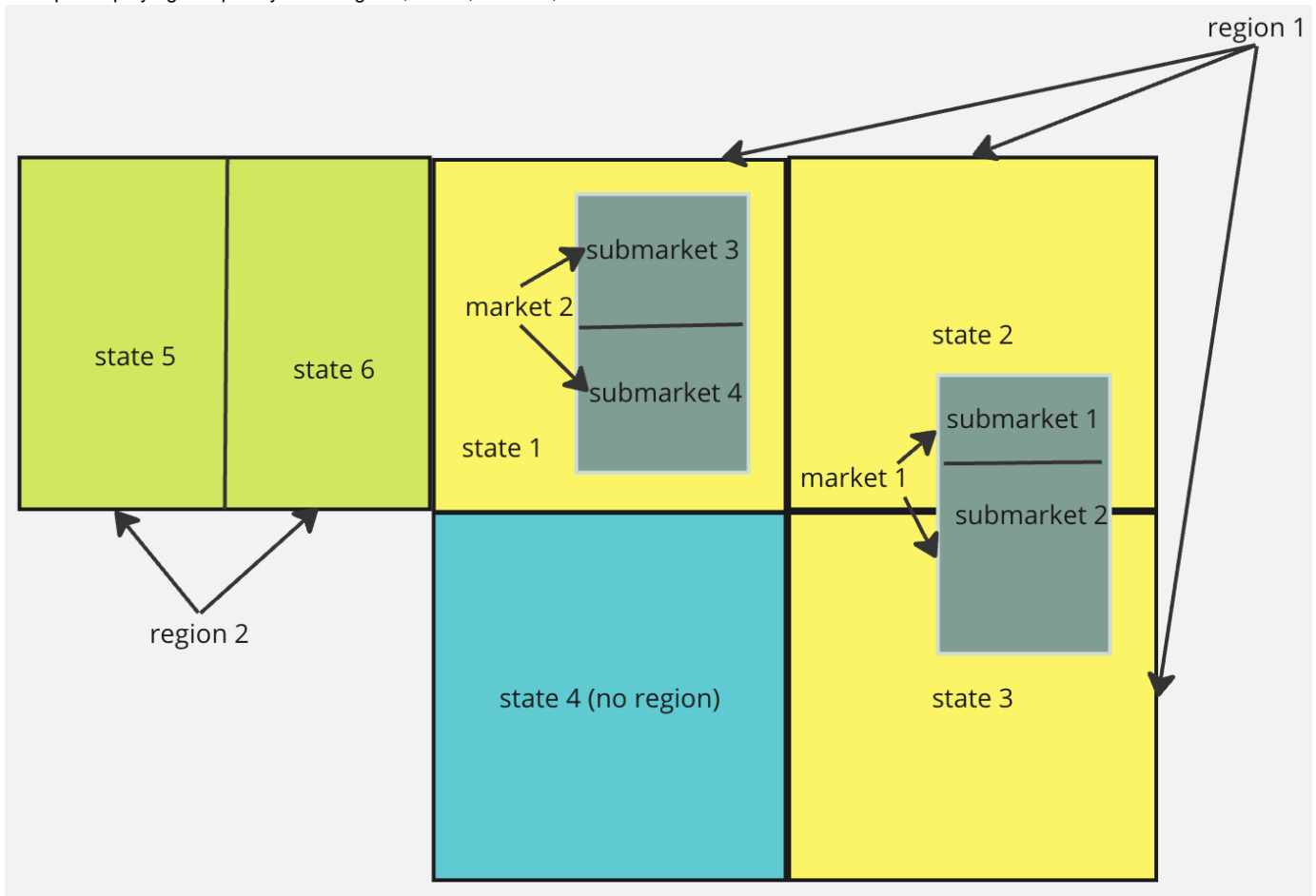# Database Question

We are designing the way America is broken up into our functional units.

- United States is broken down regions.
- A region is a cluster of states (cluster means that the group completely fills the whole and there is no space between them) , but every state can only belong into one region.
- Regions are broken down into markets. Markets can be across multiple states, but each market only belongs to one region. Region is not a cluster of markets there are spaces in a region that do not belong to any market
- Markets are broken down into submarkets. Each submarket only belongs to one market.
- Submarkets are assigned to based on polygons - a list of coordinates latitude and longitude coordinates
- There are some states that are not supported - They have no regions and none of the polygons of the submarkets fall in those states

Example displaying sample layout of regions, states, markets, submarkets

You are given a polygons (string) of the geographic coordinates (latitude and longitude) that make up submarkets.

A SQL function (`ST_Within`)exists that given coordinates takes a point (pair of latitude and longitude coordinates) and returns if the point exists in the polygon. It can be used in a "where" clause in the following way: `WHERE ST_Within({point}, {polygon_column})`

The values should be set in the following ways:

- If the point falls in the submarket polygon, the submarket, market, and region are all assigned based on the polygon
- If it is in a state with a region, but does not fall in one of the polygons, it receives the region based on the state, and the submarket and market are set to other
- If it falls in a state without a region, the region, market, and submarket are all set to the two letter state abbreviation

1. Construct a SQL script that creates a database that allows you to query the database based on a point, and receive which submarket, market, and region the point belongs to. Provide a query that given an address in the following format: 41 Seaver Wy, Queens, NY, USA and coordinates will return the submarket, market, state, and region.
2. Initially the product team is only able to provide the polygons that match the market and not the submarkets. Would this change the way the database is constructed? If so how?