<u>OBJECTIVE</u>:
The L&R Group is launching a new application called BrewNow to deliver premium beer to customers and needs a database to track breweries, distributors, drivers, samples, and customers.

<u>SITUATION</u>:
Customers who download the application will have an ID, a name, a zip code, a street, and a twelve character phone number. Customers enter this information themselves when they create an account, or it can be entered by the Application President. Customers enter information on BrewNow to make purchases. The Application President can view all customer information.
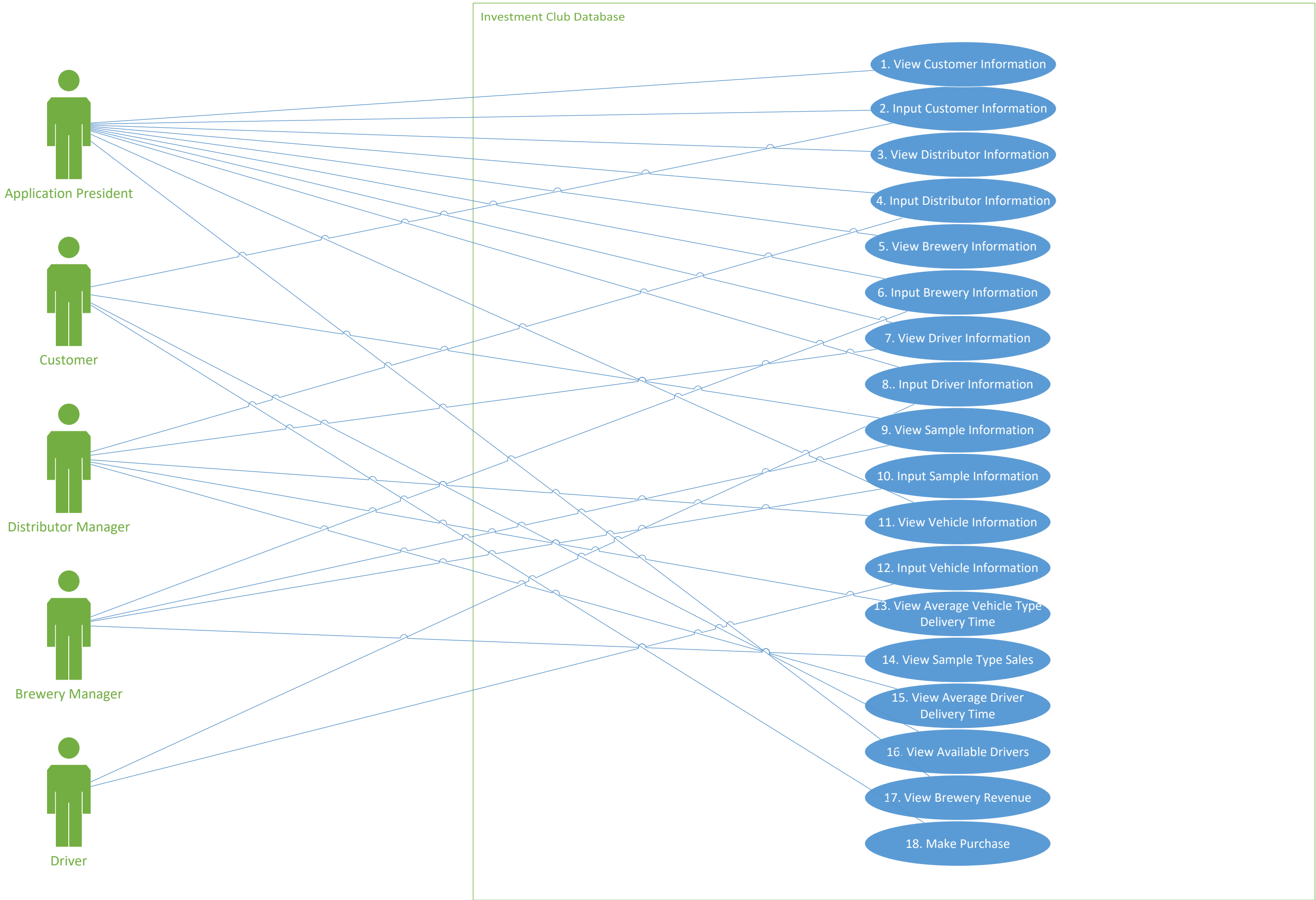
Breweries associated with BrewNow have an ID, a manager ID, a name, a website, and a state they are located in. The Application President can view the revenues of different distributors to assess profitability of BrewNow. Brewery Managers can enter their own information into the database or it can be entered by the Application President. The Application President can view all brewery information.
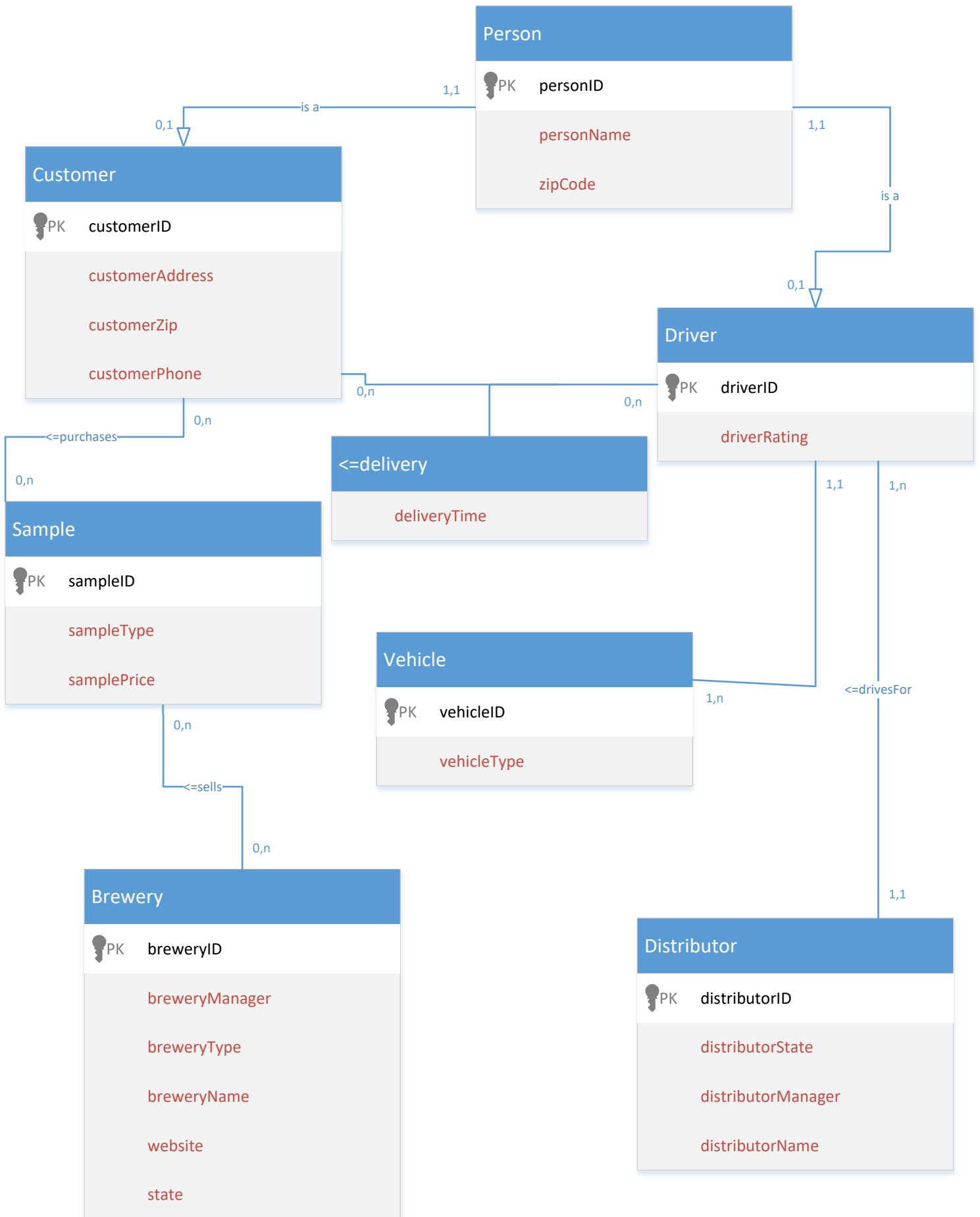
BrewNow samples are delivered to customers through drivers. Drivers have an ID, a name, a zip code, and a rating (averaged on a 1-5 scale, with 5 being the best). Customers can view available drivers for their orders by location. Drivers can enter their own information or it can be entered by the Application President. The Application President and Distributor Managers can view driver information to assess performance.
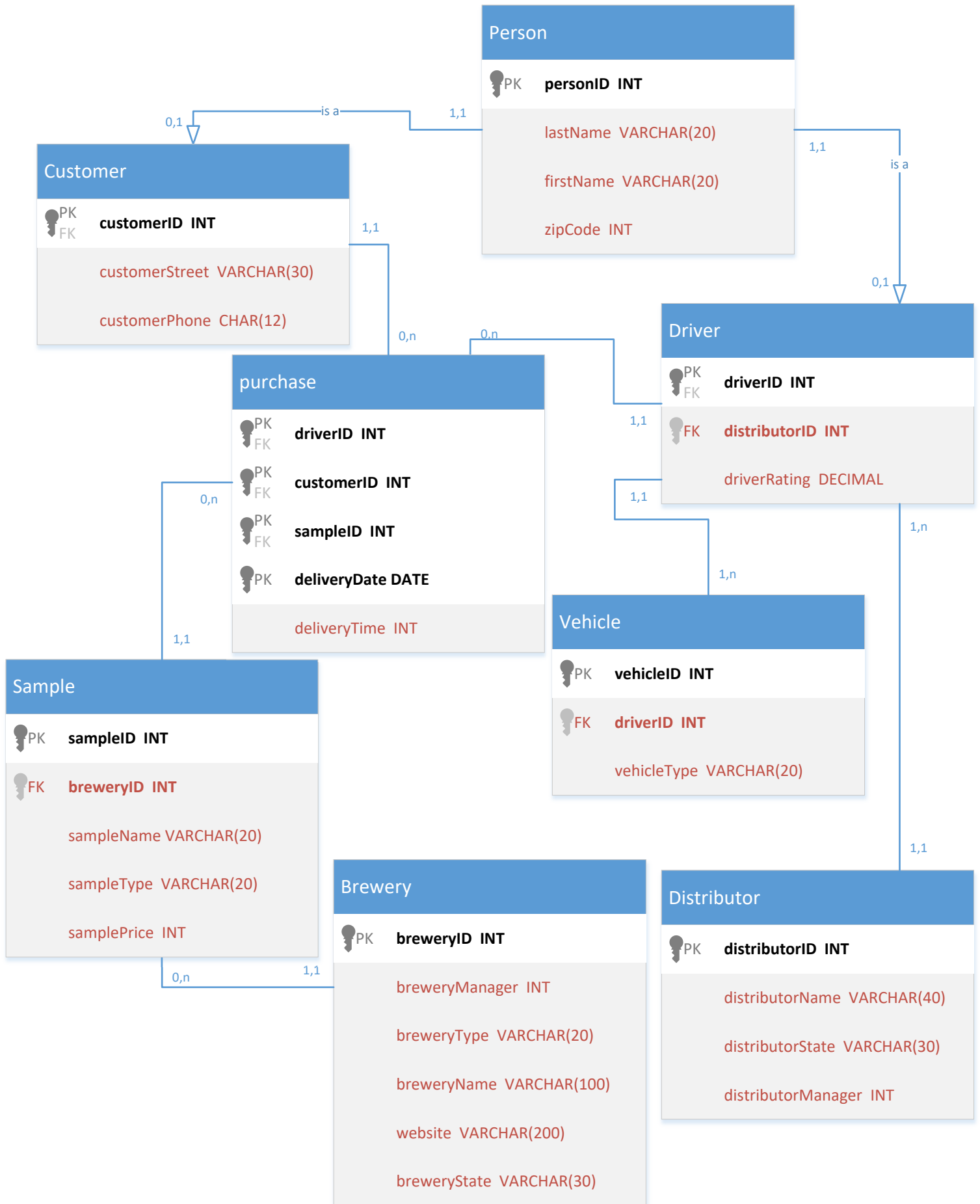
Drivers work for exactly one distributor. Distributors have an ID, a name, a manager ID, and a state.  Distributor Managers can enter their own information, or it can be entered by the Application President. Distributor Managers can view average delivery times to make business decisions. The Application President can view all Distributor Information to decide which ones are worth contracting with for BrewNow.

Drivers drive vehicles. Vehicles have an ID and a type. Drivers enter information for their own vehicle(s). Distributor Managers can view which vehicle types have the lowest average delivery time so they can better decide which drivers to hire. The Application President and Distributor Managers can view all vehicle information.

Breweries sell samples to customers. Each sample is associated with one brewery. Samples have an ID, a type, a name, and a price. Breweries can sell many different samples. Brewery Managers can enter and view samples. Customers can view samples to make purchases. Additionally, Brewery Managers can view total sample sales of a given type to identify popularity trends.

Investment Club Database

Application President

Customer

Distributor Manager

Brewery Manager

Driver

1. View Customer Information
2. Input Customer Information
3. View Distributor Information
4. Input Distributor Information
5. View Brewery Information
6. Input Brewery Information
7. View Driver Information
8.. Input Driver Information
9. View Sample Information
10. Input Sample Information
11. View Vehicle Information
12. Input Vehicle Information
13. View Average Vehicle Type Delivery Time
14. View Sample Type Sales
15. View Average Driver Delivery Time
16. View Available Drivers
17. View Brewery Revenue
18. Make Purchase

## Person
| | |
|---|---|
| PK | personID |
| | personName |
| | zipCode |

1,1 — is a — 0,1

## Customer
| | |
|---|---|
| PK | customerID |
| | customerAddress |
| | customerZip |
| | customerPhone |

1,1 — is a — 0,1

## Driver
| | |
|---|---|
| PK | driverID |
| | driverRating |

0,n

0,n

0,n

## <=delivery
| |
|---|
| deliveryTime |

0,n <=purchases

0,n

## Sample
| | |
|---|---|
| PK | sampleID |
| | sampleType |
| | samplePrice |

0,n

## Vehicle
| | |
|---|---|
| PK | vehicleID |
| | vehicleType |

1,1

1,n

1,1

1,n

<=drivesFor

<=sells

0,n

## Brewery
| | |
|---|---|
| PK | breweryID |
| | breweryManager |
| | breweryType |
| | breweryName |
| | website |
| | state |

1,1

## Distributor
| | |
|---|---|
| PK | distributorID |
| | distributorState |
| | distributorManager |
| | distributorName |

**Person**
- PK **personID INT**
- lastName VARCHAR(20)
- firstName VARCHAR(20)
- zipCode INT

**Customer**
- PK FK **customerID INT**
- customerStreet VARCHAR(30)
- customerPhone CHAR(12)

**purchase**
- PK FK **driverID INT**
- PK FK **customerID INT**
- PK FK **sampleID INT**
- PK **deliveryDate DATE**
- deliveryTime INT

**Driver**
- PK FK **driverID INT**
- FK **distributorID INT**
- driverRating DECIMAL

**Vehicle**
- PK **vehicleID INT**
- FK **driverID INT**
- vehicleType VARCHAR(20)

**Sample**
- PK **sampleID INT**
- FK **breweryID INT**
- sampleName VARCHAR(20)
- sampleType VARCHAR(20)
- samplePrice INT

**Brewery**
- PK **breweryID INT**
- breweryManager INT
- breweryType VARCHAR(20)
- breweryName VARCHAR(100)
- website VARCHAR(200)
- breweryState VARCHAR(30)

**Distributor**
- PK **distributorID INT**
- distributorName VARCHAR(40)
- distributorState VARCHAR(30)
- distributorManager INT

Relationships:
- Person 1,1 — is a — 0,1 Customer
- Person 1,1 — is a — 0,1 Driver
- Customer 1,1 — 0,n purchase
- purchase 0,n — 1,1 Driver
- purchase 0,n — 1,1 Sample
- Driver 1,1 — 1,1 Vehicle (1,n)
- Sample 0,n — 1,1 Brewery
- Driver 1,n — 1,1 Distributor

1. View Customer Information: Display a list of all customers in the application, listing their ID, street, and phone number.

2. Input Customer Information: Enter customer ID, street, and phone number, creating a new entry in Customer.

3. View Distributor Information: Display a list of all distributors in the application, listing their ID, name, state, and manager ID.

4. Input Distributor Information: Enter distributor ID, name, state, and manager ID, creating a new entry in Distributor.

5. View Brewery Information: Display a list of all breweries in the application, listing their ID, name, state, type, website, and manager ID.

6. Input Brewery Information: Enter brewery ID, name, state, type, website, and manager ID, creating a new entry in Brewery.

7. View Driver Information: Display a list of all drivers in the application, listing their ID, last name, first name, zip code, distributor ID, and rating.

8. Input Driver Information: Enter driver ID, last name, first name, zip code, distributor ID, and rating, creating a new entry in Driver.

9. View Sample Information: Display a list of all samples in the application, listing their ID, brewery ID, type, name, and price.

10. Input Sample Information: Enter sample ID, brewery ID, type, name, and price, creating a new entry in Sample.

11. View Vehicle Information: Display a list of all vehicles in the application, listing their ID, driver ID, and type.

12. Input Vehicle Information: Enter vehicle ID, driver ID, and type, creating a new entry in Vehicle.

13. View Average Vehicle Type Delivery Time: Given a vehicle type, view its average delivery time.

14. View Sample Type Sales: Given a sample type, view a running total of deliveries (sales) made for that type.

15. View Average Driver Delivery Time: Given a driver ID, view the average delivery time per sale of that particular driver.

16. View Available Drivers: Given a customer ID, view all drivers in the same zip code (available for delivery) to that customer.

17. View Brewery Revenue: Given a brewery ID, view its total revenue derived from the sum of all sales made through its samples.

18. Make Purchase: Given a customer ID, driver ID, sample ID, and delivery date, make a purchase, adding a new entry to the purchase table.

<u>DATA DISCUSSION:</u>
The external data set that will be used in this database is a CSV file from Kaggle.com called "US Breweries." The data set contains a comprehensive list of breweries in all fifty states along with their type, address, website, and state. This data will be wrangled into MySQL using a Python script to create a Brewery table.

The other main tables in this database will be inserted manually into MySQL. These will include Distributor, Driver, Customer, Person and Sample tables. The Distributor table will include 20 entries representing companies that would employ drivers for BrewNow deliveries. The Sample table will include 30 entries that will represent the assortment of beer packages that will be sold by the Breweries, along with their respective prices. The Driver table will consist of 20 people responsible for delivering samples to Customers. The Customers table will include another 20 people who have created accounts in BrewNow to purchase Beer samples. The Person super-class encompasses the 40 people split into customers and drivers, along with an additional 10 people who could possibly be added to those tables as either category if needed.

<u>ASSUMPTIONS:</u>

There are a number of assumptions made in the BrewNow database. First, several assumptions are made with regards to relationships. We assume that breweries can be associated with no samples but also many. Additionally, each sample is associated with exactly one brewery. Likewise, we assume each distributor employs at least one and possibly many drivers, while each driver works for exactly one distributor. Finally, each vehicle is owned and registered by exactly one driver, but each driver may have one or many vehicles.

Further assumptions are made with regards to how purchases work. We assume that purchases require one customer, one driver, one sample, and a delivery date. Additionally, a delivery time is associated with each purchase. For the purposes of our web server, customers enter delivery time at the time of the purchase, though in reality the customer would enter the delivery time after receiving the sample (this database does not incorporate 'real-time' transactions in its current edition).