PRACTICUM-1

Contact Tracing System for Epidemiologists and Epidemiological Research

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Individual Submission

GITHUB Repository : https://github.com/predictbay/amancs5200

1. Problem Definition - Contact Tracing

1.1 What is Contact Tracing?

According to WHO: Contact tracing is the process of identifying, assessing, and managing people who have been exposed to a disease to prevent onward transmission.

1.2 What is the purpose of Contact Tracing?

When systematically applied, contact tracing will break the chains of transmission of COVID-19 to prevent future waves or surges of cases, and to enable us to get back to work in a much safer way. Contact Tracing is an essential public health tool for controlling the virus.

1.3 How does Contact Tracing work?

Contact tracing for COVID-19 requires identifying people who may have been exposed to COVID-19 and following them up daily for 14 days from the last point of exposure.

The goal is to create a spider web of coronavirus transmission

Multiple Approaches To Trace Contacts:

1. An application approach, Continuous subject monitoring and data gathering is achieved using a mobile-application. Patients use the application to self-assess symptoms and report their interactions with other contacts, which can then be notified via the app, and put in incubation. For Example, a portable contact tracing application with real-time threat notifications based on GPS location/Bluetooth tracking, daily self-assessments, and contact reporting.

2. A general approach, where infected person contacts local Public Health Authorities and notifies them, PHAs then takes report of the person via calls & interviews, and prescribes test or medical assessments. Daily reports and health updates are taken by the assigned personnel until the incubation period is active. All the contract tracing is done manually by the PHAs, who then feed the data into a central reporting system.

3. A combined approach, where both self-assessments and manual assessments are possible. Patients choose if they would like to contact and schedule meetings with PHAs or prefer the use of a real-time contact tracing app regularly. PHAs gather and anonymise all the data, and put it in a graph database. The graph databases are then analysed to create heatmaps of the COVID-19 affected areas, which are later turned into containment zones.

2 Most Efficient Approach - Contact Tracing

(Combined Approach)

Combined approach assumes that the local, regional, or national Public Health body of a geographical area, has offered three ways, to keep a check on COVID-19

epidemic: a mobile application, a website, and a dedicated COVID-19 helpline to implement contact tracing measures.

1. **Automated**: A self-assessment and self-reporting based portable application, capable of running on multiple types of devices such as mobile phones, tablets, and laptops with real-time geolocation and Bluetooth based proximity tracing of other users, running the same application of their devices. Each user's *HealthStatus* tokens are broadcasted within a 30 metres radius, and every user of the application in the proximity range will receive these tokens. If a sick user is nearby, all the users in the vicinity will get a threat alert. The total interaction time or visit time of a user will be recorded whenever he or she, meets or passes by, a sick person, or visits a place. If a user is not feeling and suspects that he or she might have been exposed to COVID-19, then there is a self-assessment option which contains a predefined set of questions, that can predict the likelihood of infection. If the assessment score bypasses the defined threshold, all users in the vicinity are notified of potential threat; Local health authority(LHA) is notified via the application. The LHA then prescribes a suitable COVID-19, and if the user tests positive, an incubation period of 14 days is initiated, which contains daily self-assessments, self-quarantining, and self-reporting of every place visited, every person in touch, and every notable interaction made within the past 14 days.

2. **Semi-Automated:** Some users have privacy issues when it comes to using applications that continuously record user data, and keep surveillance over their activities. For such users, a website or a similar app without monitoring is a better option, to implement contact tracing. When such a user feels sick, he can go to the LHA website, and take a self-assessment test, if the test results indicate potential infection, their identity is anonymised and location data is fed into the central database(common to all strategies). The user has to take a daily self-assessment until he or she is marked 'healthy' again, and all the contact reporting is done on the website. The central database is used to create heatmaps of coronavirus stricken areas, the website users can manually check the heatmap zones online, whereas it is inbuilt in the application.

3. **Manual:** For users, who have no viable means to use the website or application, there is a dedicated helpline number, which takes care of daily assessments, and contact reporting. Things are done manually, via phone conversations or administered meetings, and all the gathered data is then manually uploaded to the database.

3.Database Tools Specification

Overview

The database for a Contact Tracing system is can be implemented using many relational and non-relational DBMS such MySQL, PostgreSQL, MongoDB, Neo4j, Oracle DB. Parts of the project can be implemented using graph-databases, because they will be best suited for running depth queries and discovering links at greater depths, but for this particular

Practicum, we will be using MySQL as a DBMS tool ubiquitously, and R Studio for running Analytics. MySQL has many advantages and some limitations, as given below:

Advantages of MySQL
1. Open source, inexpensive and readily available.

2. Industry Standard, and very popular.

3. Extensive support available online.

4. Ease, Intuitiveness and Usability

5. Outstanding InnoDB engine.

Drawbacks
1. Scalability issues can arise with time.

2. Not very easy to debug.

3. Does not support very large databases efficiently.

Advantages of R
1. Open source, Platform Independent

2. Rapid, and quality plotting

3. Non-Coder friendly, anyone can start plotting within a hours

4. Rich and continuously growing sets of packages (>10000) in the CRAN repository

Drawbacks
1. R Utilizes more memory as objects are stored in the memory.

2. Slower than other programming languages like Python and Matlab

3. Does not support very large scale applications efficiently.

4. Overall Assumptions & Constraints.
Assumptions:
1. Only some parts of the whole application will be reflected in the relational database, some data will stored locally on the host devices, such as state variables, local variables, events data, device permissions details, etc.

2. There can be many use cases, but the database is designed keeping in mind only some of these use cases, hence some parts of the database can be missing For Example. The assessment-survey module can have 4 more classes, but we are only using one for now.

3. The depth of queries will be set to 5, because MySQL is not a graph-database, it takes a good amount of time and processing power to create Joins, and make connections.

4. Application logic and host application will be created at a later time.

Constraints:
- **Domain Level:**

1. Varchar for string data

2. Integer for whole numbers

3. Boolean for binary choices (True or False, Yes or No, Correct or Incorrect, these kind of choices will be implemented using 0s & 1s

4. Enum for Lists or categorical attributes

5. Text for descriptions

- **Referential Integrity:**

1. *Place* extends to *Interactions, AppUser, Visits, PublicHealthAuthority*

2. *Person* extends to *AppUser* and *PublicHealthWorker*

3. *AppUser* extends to *Place, Interactions, Assessment, HealthReportCheck* and *Person*

4. *UserEvents* extends to *Visits*, *Interactions* and *ContactHistoryLog*

5. *PersonNotification, AppUserEmail, PersonPhone* are linking tables.

- **Entity Integrity**
1. All classes have primary keys, all primary keys are set to NOT NULL

2. Key constraints are enabled SET FOREIGN_KEY_CHECKS = 1

5.UML Class Diagram

Conceptual Model Link

Diagram 1 - Conceptual UML Class Diagram, for a COVID-19 Contact Tracing System to aid epidemiological research.
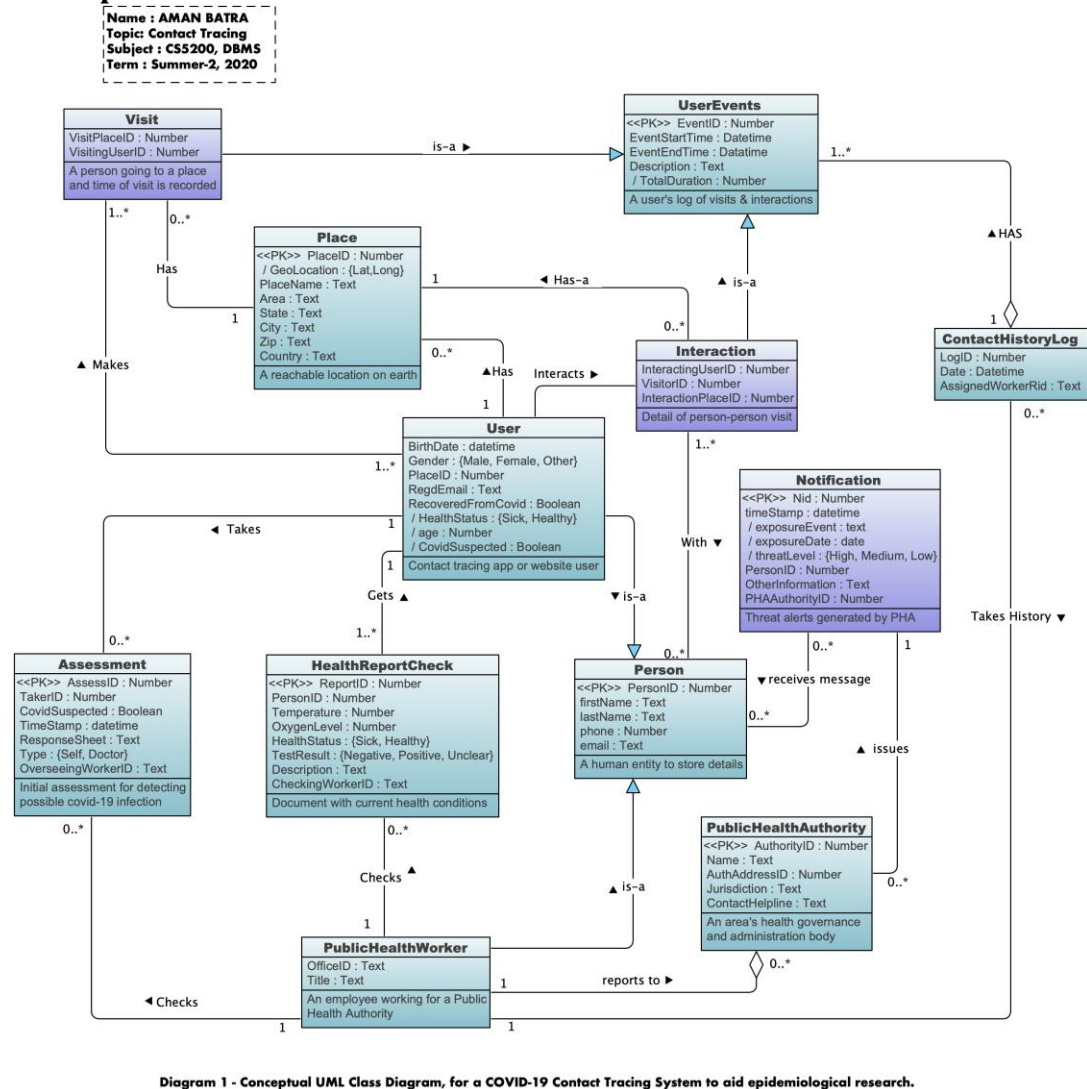
Design Tool Used: Visual Paradigm Community Edition for Mac

Link to Files: https://github.com/predictbay/amancs5200

6. Entity Relationship Diagram

Link to LucidChart: "Logical Model LUCIDCHART Link"

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Logical ER Diagram - CONTACT TRACING SYSTEM

Name: Aman Batra, NUID: OO1877232,
Course: CS5200
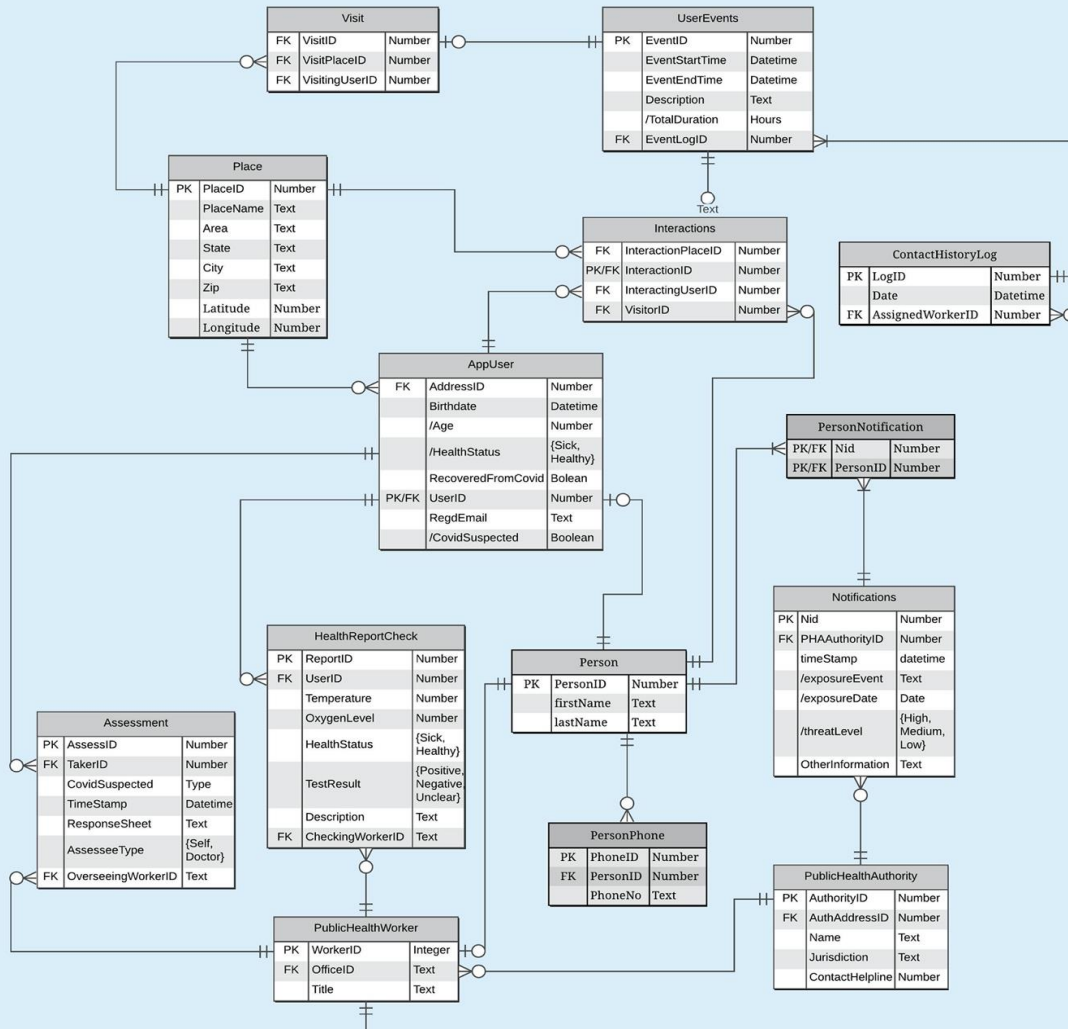
Diagram 2 - Logical ER Diagram, for a COVID-19 Contact Tracing System to aid epidemiological research.

7. Schema Generation & Normalization Check Results

Relational Schema:

Place(*placeint* ,placename,streetarea,city,state,zip,latitude,longitude)

Person(*PersonID*,firstName,lastName)

PersonPhone(PhoneNo,PersonID)

AppUser(*UserID*,*AddressID*,RecoveredFromCovid)

AppUserEmail(EmailID, UserID)

PublicHealthWorker(WorkerID,title,*officeID* ,PublicAuthID)

PublicHealthAuthority(*AuthorityID* ,AuthAddressID,Name,Jurisdiction)

PublicHealthAuthorityHelpline(HelplineNo,AuthorityID)

UserEvent(*EventID*,EventStartTime,EventEndTime,Description)

Visits(VisitID,VisitingUserID,VisitPlaceID)

Interactions(InteractionID ,interactingUserID,VisitorID,InteractionPlaceID)

Notifications(*Nid* ,PHAAuthorityID,timestamp,OtherInformation)

HealthReportCheck(*ReportID* ,UserID,Temperature,OxygenLevel,HealthStatus,TestResult,Descriptions,CheckingWorkerID, ReportDate)

Assessment(AssessID,TakerID,CovidSuspected,TimeStamp,ResponseSheet, AssesseeType, OverseeingWorkerID)

PersonNotification(Nid, PersonID)

Normalization to BCNF

This following table lists out every relation in the database and provides proof to make sure its in BCNF. There Is no need to prove lower normal forms like 1NF, 2NF and 3NF because, if a relationship in BCNF, it IMPLIES that it is already normalized in lower forms.

The relationships shows below, comply with all of the following criterion, needed for validating BCNF.

1. Every relationship has a valid candidate key as their determinants(All determinants are candidate keys)

2. There is no partial dependency of any kind

3. No composite candidate keys with overlapping attributes

4. No multivalued attributes exist

5. No transitive dependency.

1

"AppUser"

 UserID=>addressid UserID=>=>name UserID=>birthdate

- **UserID** is a candidate key and Primary key which uniquely identifies Birthdate, AddressID, RecoveredFromCovid.
- **AddressID** is a Candidate Key, because it can uniquely identify an AppUser
- No Partial Dependency or Multivalued Attribute exist in this relationship
- There is no non-trivial FD without a candidate key. Hence table is in BCNF

2

"AppUserEmail"

EmailID -> UserId

- **UserID** is a candidate key and Primary key which uniquely identifies Birthdate, AddressID, RecoveredFromCovid.
- **AddressID** is a Candidate Key, because it can uniquely identify an AppUser
- No Partial Dependency or Multivalued Attribute exist in this relationship
- There is no non-trivial FD without a candidate key. Hence table is in BCNF

3
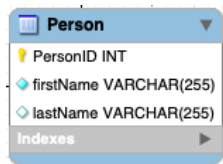
"Person"

 PersonID=>firstname PersonID=>lastname

- **PersonID** is a candidate key and Primary key which uniquely identifies firstname, lastname
- No Partial Dependency or Multivalued Attribute exist in this relationship
- There is no non-trivial FD without a candidate key. Hence table is in BCNF

4
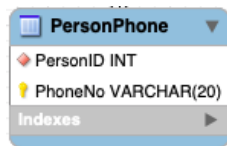
"PersonPhone"

 PhoneNo=>PhoneID - **PhoneNo** is a candidate key and Primary key which uniquely identifies PersonID - PersonID is not unique here because a user can have multiple phone numbers. - No Partial Dependency or Multivalued Attribute exist in this relationship - There is no non-trivial FD without a candidate key. Hence table is in BCNF

5
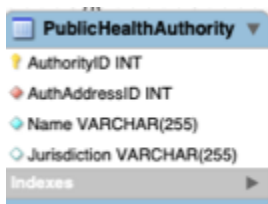
 AuthorityID=>AuthAddressID AuthorityID=>Name AuthorityID=>Jurisdiction

- **authorityid** is a candidate key and Primary key which uniquely identifies all other attributes
- name, jurisdiction for a secondary relationship that can identify authorityid
- No Partial Dependency or Multivalued Attribute exist in this relationship
- There is no non-trivial FD without a candidate key. Hence table is in BCNF

6

 helplineno=>authoritid - **helplineno** is a candidate key and Primary key which uniquely identifies AuthorityID, because a number cannot be shared by multiple authorities in our assumption - authorityID has multiple numbers hence not unique to relationship - No Partial Dependency or Multivalued Attribute exist in this relationship - There is no non-trivial FD without a candidate key. Hence table is in BCNF

7
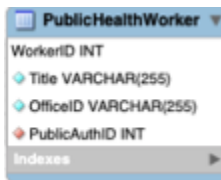
 Workerid => officeid Workerid => Title Workerid => publicauthid - **WorkerID** is a candidate key and Primary key which uniquely identifies Title, OfficeID, publicauthID - **OfficeID** is a candidate key which uniquely identified the PK - PubliAuthID has multiple workers so not unique to relationship - No Partial Dependency or Multivalued Attribute exist in this relationship - There is no non-trivial FD without a candidate key. Hence table is in BCNF

8

AssessId=>takerid AssessId=>covidsuspected AssessId=>timestamp AssessId=>responsesheet AssessId=>assesseetype AssessId=>overseeingworkerid - **WorkerID** is a candidate key and Primary key which uniquely identifies all the attributes - Same TakerID is on multiple assessments so not unique to relationship - Timestamp, takerid and overseeingworkerid form a secondary relationship (non-primes to key) - No Partial Dependency or Multivalued Attribute exist in this relationship - There is no non-trivial FD without a candidate key. Hence table is in BCNF


9

ReportID=>userid ReportID=>temperature ReportID=>oxygenlevel ReportID=>healthstatus ReportID=>testresult ReportID=>description ReportID=>checkingworkerid ReportID=>reportdate

- **ReportID** is a candidate key and Primary key which uniquely identifies all the attributes
- Same UserID is on multiple Reports so not unique to relationship
- No Partial Dependency or Multivalued Attribute exist in this relationship
- There is no non-trivial FD without a candidate key. Hence table is in BCNF

10

 InteractionID=>interactinguserid
InteractionID=>interactingplaceid InteractionID=>visitid

- **InteractionID** is a candidate key and Primary key which uniquely identifies all the attributes
- Same InteractingUseID, VisitorID and InteractionPlaceID can exist on multiple interactions so not unique to relationship
- No Partial Dependency or Multivalued Attribute exist in this relationship
- There is no non-trivial FD without a candidate key. Hence table is in BCNF


11

 eventid=>logbookid eventid=>description
eventid=>eventstarttime eventid=>eventendtime - **EventID** is a candidate key and Primary key which uniquely identifies logbookid, description, eventstarttime, eventendtime - Same set of start time, end time and logbookid can exist in case the database is really large so they are not unique to relationship - No Partial Dependency or Multivalued Attribute exist in this relationship - There is no non-trivial FD without a candidate key. Hence table is in BCNF


12

placeid=>placename placeid=>streetarea
placeid=>state placeid=>city placeid=>coountry placeid=>latitude placeid=>longitude -

placeid is a candidate key and Primary key which uniquely identifies logbookid, description, eventstarttime, eventendtime - Same set of address and coordinates can exist in case for multiple persons sharing an address, so they are not unique to relationship - No Partial Dependency or Multivalued Attribute exist in this relationship - There is no non-trivial FD without a candidate key. Hence table is in BCNF

13
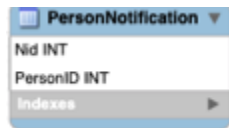
 Nid,PersonID - (Nid,PersonID) is the only candidate key and a primary key, no non-prime attribute exist, so no dependency - No Partial Dependency or Multivalued Attribute exist in this relationship - There is no non-trivial FD without a candidate key. Hence table is in BCNF

14
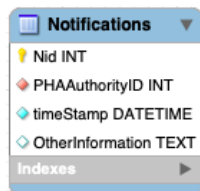
 nid=>PHAauthorityid nid=>timestamp nid=>otherinformation - **nid** is a candidate key and Primary key which uniquely identifies PHAAuthorityID, timestamp, otherinformation - trivial attributes (phaauthorityid, timestamp, otherinformation) form a secondary relationship. (Non-prime to key) - No Partial Dependency or Multivalued Attribute exist in this relationship - There is no non-trivial FD without a candidate key. Hence table is in BCNF


15
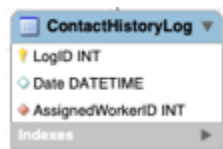
 logid=>date logid=>assignedworkerid - **logid** is a candidate key and Primary key which uniquely identifies date and assignedworker - AssignedWorkerID can exist on multiple logs, so it is not unique to this relationship - No

Partial Dependency or Multivalued Attribute exist in this relationship - There is no non-trivial FD without a candidate key. Hence table is in BCNF

16
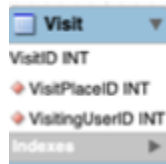
 visitid=>visitinguserid visitid=>visitplaceid - **VisitID** is a candidate key and Primary key which uniquely identifies VisitPlaceID and VisitingUserID - (VisitPlaceID,VisitingUserId) do not uniquely identify a visit because, there can be multiple visits, even on the same day - No Partial Dependency or Multivalued Attribute exist in this relationship - There is no non-trivial FD without a candidate key. Hence table is in BCNF

8. Integrity Checking Trials & Proofs

1.)Referential Integrity : Foreign Key Check

Test #1

Attempt to deleted a referenced record:

```
DELETE from AppUser where userid = 1499;
```

Text Box: DELETE from AppUser where userid = 1499;

Response:

Error Code: 1451. Cannot delete or update a parent row: a foreign key constraint fails (`contacttracingdb`.`appuseremail`, CONSTRAINT `appuseremail_ibfk_1` FOREIGN KEY (`UserID`) REFERENCES `appuser` (`UserID`)) 0.0039 sec

Text Box: Error Code: 1451. Cannot delete or update a parent row: a foreign key constraint fails (contacttracingdb.appuseremail, CONSTRAINT appuseremail_ibfk_1 FOREIGN KEY (UserID) REFERENCES appuser (UserID)) 0.0039 sec

---

Test#2

Attempt to insert an unreferenced record:

```
INSERT INTO PublicHealthWorker
VALUES(1600,'MisterA',131245,13112);
```

Text Box: INSERT INTO PublicHealthWorker VALUES(1600,'MisterA',131245,13112);

Response:

```
Error Code: 1452. Cannot add or update a child row: a foreign key constraint fails
(`contacttracingdb`.`publichealthworker`, CONSTRAINT
`publichealthworker_ibfk_2` FOREIGN KEY (`WorkerID`) REFERENCES
`person` (`PersonID`))
```

Text Box: Error Code: 1452. Cannot add or update a child row: a foreign key constraint fails (contacttracingdb.publichealthworker, CONSTRAINT publichealthworker_ibfk_2 FOREIGN KEY (WorkerID) REFERENCES person (PersonID))

  2.) Domain Integrity : Alien Value Check***

Test #1

Attempt to insert a non-allowed value:

```
INSERT INTO Assessment VALUES(3899,1600,0,'2020-05-29 08:37:55','a
random description','Friend',1511)
```

Text Box: INSERT INTO Assessment VALUES(3899,1600,0,'2020-05-29 08:37:55','a random description','Friend',1511)

Response:

```
Error Code: 1265. Data truncated for column 'AssesseeType' at row 1
0.00028 sec
```

Text Box: Error Code: 1265. Data truncated for column 'AssesseeType' at row 1 0.00028 sec

 *** Test#2

Attempt to INSERT a value outside bounds:

```
INSERT INTO Place VALUES(1002,'Parua','RODQ
PLACE','EAST BOSTON','MA','2128',42.36443246,-
731234568910);
```

Text Box: INSERT INTO Place VALUES(1002,'Parua','RODQ PLACE','EAST BOSTON','MA','2128',42.36443246,-731234568910);

Response:

Text Box: Error Code: 1264. Out of range value for column 'longitude' at row 1 0.00026 sec

---

3.) Entity Integrity and Key Constraints : Primary Key Null check

Test #1

Attempt to INSERT a NULL value for PRIMARY KEY :

Text Box: INSERT INTO AppUserEmail(UserID, EmailID) VALUES (1101,null);

Response:

Text Box: Error Code: 1048. Column 'EmailID' cannot be null

Test#2

Attempt to INSERT a VALUE in AUTO_INCREMENT Primary key field: We can clearly see that the Primary Key was autogenerated when a NULL value was passed.

```
INSERT INTO Place VALUES(NULL,'Aman','Batra
PLACE','SOUTH BOSTON','MA','2128',42.36467840,-
72.03322720);
Select * FROM PLACE where placename='Aman';
```

Text Box: INSERT INTO Place VALUES(NULL,'Aman','Batra PLACE','SOUTH BOSTON','MA','2128',42.36467840,-72.03322720); Select * FROM PLACE where placename='Aman';

Response:

```
1 row(s) affected.

1001 Aman Batra PLACE     SOUTH BOSTON    MA    2128
      42.36467840    -72.03322720
```

Text Box: 1 row(s) affected. 1001 Aman Batra PLACE SOUTH BOSTON MA 2128 42.36467840 -72.03322720

Test#3: Checking Uniqueness of Keys

Counting primary keys of Places

```
SELECT placeid,COUNT(*) as total FROM place GROUP BY
placeid HAVING total > 1;
```

Text Box: SELECT placeid,COUNT(*) as total FROM place GROUP BY placeid HAVING total > 1;

Response:

```
0 row(s) returned
```

Text Box: 0 row(s) returned

9 . Create Tables and Insert Values

```
library(RMySQL)

## Warning: package 'RMySQL' was built under R version 4.0.2

## Loading required package: DBI
```

```r
library(DBI)
library(RColorBrewer)
conn = dbConnect(MySQL(), userName="root", password="atcbtra123",
dbname="ContactTracingDB", host="localhost",port = 3306)
```

```r
dbSendQuery(conn,'CREATE TABLE IF NOT EXISTS Place (
  placeid INT NOT NULL AUTO_INCREMENT,
  placename VARCHAR(255) NOT NULL,
  streetarea VARCHAR(255) NOT NULL,
  state VARCHAR(255) NOT NULL,
  city VARCHAR(255) NOT NULL,
  zip VARCHAR(255) NOT NULL,
  latitude decimal(10,8) signed NOT NULL,
  longitude decimal(11,8) signed NOT NULL,
  PRIMARY KEY (placeid)
);')
```

<MySQLResult:-813415656,0,0>

```r
dbSendQuery(conn,'CREATE TABLE IF NOT EXISTS Person (
  PersonID INT NOT NULL AUTO_INCREMENT,
  firstName VARCHAR(255) NOT NULL,
  lastName VARCHAR(255),
  PRIMARY KEY (PersonID)
);')
```

<MySQLResult:-795721656,0,1>

```r
dbSendQuery(conn,'CREATE TABLE IF NOT EXISTS AppUser (
  UserID INT NOT NULL,
  Birthdate date NOT NULL,
  AddressID INT NOT NULL,
  RecoveredFromCovid Boolean,
  PRIMARY KEY (UserID),
  FOREIGN KEY(UserID) REFERENCES Person(PersonID),
  FOREIGN KEY (AddressID) REFERENCES Place(PlaceID)
);')
```

<MySQLResult:2,0,2>

```r
dbSendQuery(conn,'CREATE TABLE IF NOT EXISTS PublicHealthAuthority (
  AuthorityID INT NOT NULL AUTO_INCREMENT,
  AuthAddressID INT NOT NULL,
  Name VARCHAR(255) NOT NULL,
  Jurisdiction VARCHAR(255),
  PRIMARY KEY (AuthorityID),
  FOREIGN KEY (AuthAddressID) REFERENCES Place(PlaceId)
);')
```

<MySQLResult:-2,0,3>

```
dbSendQuery(conn,'CREATE TABLE IF NOT EXISTS PublicHealthWorker (
  WorkerID INT NOT NULL,
  Title VARCHAR(255) NOT NULL,
  OfficeID VARCHAR(255) NOT NULL,
  PublicAuthID INT NOT NULL,
  PRIMARY KEY (WorkerID),
  FOREIGN KEY (PublicAuthID) REFERENCES PublicHealthAuthority(AuthorityID),
  FOREIGN KEY (WorkerID) REFERENCES Person(PersonId)
);')
```

<MySQLResult:0,0,4>

```
dbSendQuery(conn,'CREATE TABLE IF NOT EXISTS ContactHistoryLog (
  LogID INT NOT NULL AUTO_INCREMENT,
  Date datetime,
  AssignedWorkerID INT NOT NULL,
  PRIMARY KEY (LogID),
  FOREIGN KEY (AssignedWorkerID) REFERENCES PublicHealthWorker(WorkerId)
);')
```

<MySQLResult:-830405576,0,5>

```
dbSendQuery(conn,'CREATE TABLE IF NOT EXISTS UserEvents (
  EventID INT NOT NULL AUTO_INCREMENT,
  EventStartTime Datetime NOT NULL,
  EventEndTime Datetime NOT NULL,
  LogBookID INT NOT NULL,
  Description VARCHAR(1200),
  PRIMARY KEY (EventID),
  FOREIGN KEY (LogBookID) REFERENCES ContactHistoryLog(LogID)
);')
```

<MySQLResult:-830138960,0,6>

```
dbSendQuery(conn,"CREATE TABLE IF NOT EXISTS HealthReportCheck(
  ReportID INT NOT NULL AUTO_INCREMENT,
  UserID INT NOT NULL,
  Temperature decimal(10, 3),
  OxygenLevel decimal(10, 3),
  HealthStatus ENUM ('sick','healthy') NOT NULL,
  TestResult enum('Positive','Negative','Unclear') NOT NULL,
  Description Text,
  CheckingWorkerID INT NOT NULL,
  ReportDate date,
  PRIMARY KEY (ReportID),
  FOREIGN KEY (UserID) REFERENCES AppUser(UserID),
  FOREIGN KEY(CheckingWorkerID) REFERENCES PublicHealthWorker(WorkerId)
);")
```

<MySQLResult:-744834160,0,7>

```
dbSendQuery(conn,"CREATE TABLE IF NOT EXISTS Assessment (
  AssessID INT NOT NULL AUTO_INCREMENT,
  TakerID INT NOT NULL,
  CovidSuspected boolean NOT NULL,
  TimeStamp Datetime NOT NULL,
  ResponseSheet VARCHAR(255),
  AssesseeType enum('self','doctor','others') NOT NULL,
  OverseeingWorkerID INT NOT NULL,
  PRIMARY KEY (AssessID),
  FOREIGN KEY (TakerID) REFERENCES AppUser(UserId),
  FOREIGN KEY (OverseeingWorkerID) REFERENCES PublicHealthWorker(WorkerId)
);")

## <MySQLResult:12,0,8>

dbSendQuery(conn,'CREATE TABLE IF NOT EXISTS AppUserEmail (
  UserID INT NOT NULL,
  EmailID VARCHAR(255) NOT NULL,
  PRIMARY KEY (EmailID),
  FOREIGN KEY(UserID) REFERENCES AppUser(UserID)
);')

## <MySQLResult:12,0,9>

dbSendQuery(conn,'CREATE TABLE IF NOT EXISTS PublicHealthAuthorityHelpline(
  HelplineNo VARCHAR(255) NOT NULL,
  AuthorityID INT NOT NULL,
  PRIMARY KEY(HelplineNo),
  FOREIGN KEY(AuthorityID) REFERENCES PublicHealthAuthority(AuthorityID)
);')

## <MySQLResult:12,0,10>

dbSendQuery(conn,'CREATE TABLE IF NOT EXISTS Interactions (
  InteractionID INT NOT NULL,
  InteractingUserID INT NOT NULL,
  VisitorID INT NOT NULL,
  InteractionPlaceID INT NOT NULL,
  PRIMARY KEY (InteractionID),
  FOREIGN KEY (InteractionID) REFERENCES UserEvents(EventID),
  FOREIGN KEY (InteractingUserID) REFERENCES AppUser(UserID),
  FOREIGN KEY (VisitorID) REFERENCES Person(PersonID),
  FOREIGN KEY (InteractionPlaceID) REFERENCES Place(PlaceId)
);')

## <MySQLResult:8,0,11>

dbSendQuery(conn,'CREATE TABLE IF NOT EXISTS Visit (
  VisitID INT NOT NULL,
  VisitPlaceID INT NOT NULL,
  VisitingUserID INT NOT NULL,
  PRIMARY KEY (VisitID),
```

```
  FOREIGN KEY (VisitID) REFERENCES UserEvents(EventID),
  FOREIGN KEY (VisitPlaceID) REFERENCES Place(PlaceID),
  FOREIGN KEY(VisitingUserID) REFERENCES AppUser(UserID)
);')
```

<MySQLResult:1,0,12>

```
dbSendQuery(conn,'CREATE TABLE IF NOT EXISTS Notifications (
  Nid INT NOT NULL AUTO_INCREMENT,
  PHAAuthorityID INT NOT NULL,
  timeStamp datetime NOT NULL,
  OtherInformation Text,
  PRIMARY KEY (Nid),
  FOREIGN KEY (PHAAuthorityID) REFERENCES PublicHealthAuthority(AuthorityId)
);')
```

<MySQLResult:1,0,13>

```
dbSendQuery(conn,'CREATE TABLE IF NOT EXISTS PersonNotification (
  Nid INT NOT NULL,
  PersonID INT NOT NULL,
  PRIMARY KEY (Nid, PersonID),
  FOREIGN KEY(Nid) REFERENCES Notifications(Nid),
  FOREIGN KEY(PersonID) REFERENCES Person(PersonID)
);')
```

<MySQLResult:-806711016,0,14>

```
dbSendQuery(conn,'CREATE TABLE IF NOT EXISTS PersonPhone(
  PersonID INT NOT NULL,
  PhoneNo VARCHAR(20) NOT NULL,
  PRIMARY KEY (PhoneNo),
  FOREIGN KEY (PersonID) REFERENCES Person(PersonID)
);')
```

<MySQLResult:-793148464,0,15>

```
dbDisconnect(conn)
```

Warning: Closing open result sets

[1] TRUE

Limit to 2000 rows

```sql
1    CREATE TABLE `AppUser` (
2        `UserID` int NOT NULL,
3        `Birthdate` date NOT NULL,
4        `AddressID` int NOT NULL,
5        `RecoveredFromCovid` tinyint(1) DEFAULT NULL,
6        PRIMARY KEY (`UserID`),
7        KEY `AddressID` (`AddressID`),
8        CONSTRAINT `appuser_ibfk_1` FOREIGN KEY (`UserID`) REFERENCES `Person` (`PersonID`),
9        CONSTRAINT `appuser_ibfk_2` FOREIGN KEY (`AddressID`) REFERENCES `Place` (`placeid`)
10   );
11
12   CREATE TABLE `AppUserEmail` (
13       `UserID` int NOT NULL,
14       `EmailID` varchar(255) NOT NULL,
15       PRIMARY KEY (`EmailID`),
16       KEY `UserID` (`UserID`),
17       CONSTRAINT `appuseremail_ibfk_1` FOREIGN KEY (`UserID`) REFERENCES `AppUser` (`UserID`)
18   ) ;
19
20   CREATE TABLE `Assessment` (
21       `AssessID` int NOT NULL AUTO_INCREMENT,
22       `TakerID` int NOT NULL,
23       `CovidSuspected` tinyint(1) NOT NULL,
24       `TimeStamp` datetime NOT NULL,
25       `ResponseSheet` varchar(255) DEFAULT NULL,
26       `AssesseeType` enum('self','doctor','others') NOT NULL,
27       `OverseeingWorkerID` int NOT NULL,
28       PRIMARY KEY (`AssessID`),
29       KEY `TakerID` (`TakerID`),
30       KEY `OverseeingWorkerID` (`OverseeingWorkerID`),
31       CONSTRAINT `assessment_ibfk_1` FOREIGN KEY (`TakerID`) REFERENCES `AppUser` (`UserID`),
```

100% | 90:31

Action Output

		Time	Action	Res
✓	1	03:04:37	Apply changes to ContactDB	Cha

Limit to 2000 rows

```
1    CREATE TABLE IF NOT EXISTS Place (
2        placeid INT NOT NULL AUTO_INCREMENT,
3        placename VARCHAR(255) NOT NULL,
4        streetarea VARCHAR(255) NOT NULL,
5        state VARCHAR(255) NOT NULL,
6        city VARCHAR(255) NOT NULL,
7        zip VARCHAR(255) NOT NULL,
8        latitude decimal(10,8) signed NOT NULL,
9        longitude decimal(11,8) signed NOT NULL,
10       PRIMARY KEY (placeid)
11   );
12   CREATE TABLE IF NOT EXISTS Person (
13       PersonID INT NOT NULL AUTO_INCREMENT,
14       firstName VARCHAR(255) NOT NULL,
15       lastName VARCHAR(255),
16       PRIMARY KEY (PersonID)
17   );
18   CREATE TABLE IF NOT EXISTS AppUser (
19       UserID INT NOT NULL,
20       Birthdate date NOT NULL,
21       AddressID INT NOT NULL,
22       RecoveredFromCovid Boolean,
23       PRIMARY KEY (UserID),
24       FOREIGN KEY(UserID) REFERENCES Person(PersonID),
25       FOREIGN KEY (AddressID) REFERENCES Place(PlaceID)
```

100%   3:26

Action Output

	Time	Action
1	03:17:49	CREATE TABLE IF NOT EXISTS Place (placeid INT NOT NULL AUTO_INCREMENT, placename VARCHAR(255) NOT NULL,...
2	03:17:49	CREATE TABLE IF NOT EXISTS Person (PersonID INT NOT NULL AUTO_INCREMENT, firstName VARCHAR(255) NOT NUL...
3	03:17:50	CREATE TABLE IF NOT EXISTS AppUser (UserID INT NOT NULL, Birthdate date NOT NULL, AddressID INT NOT NULL,...

Limit to 2000 rows

```sql
1    CREATE TABLE IF NOT EXISTS PublicHealthAuthority (
2        AuthorityID INT NOT NULL AUTO_INCREMENT,
3        AuthAddressID INT NOT NULL,
4        Name VARCHAR(255) NOT NULL,
5        Jurisdiction VARCHAR(255),
6        PRIMARY KEY (AuthorityID),
7        FOREIGN KEY (AuthAddressID) REFERENCES Place(PlaceId)
8    );
9    CREATE TABLE IF NOT EXISTS PublicHealthWorker (
10       WorkerID INT NOT NULL,
11       Title VARCHAR(255) NOT NULL,
12       OfficeID VARCHAR(255) NOT NULL,
13       PublicAuthID INT NOT NULL,
14       PRIMARY KEY (WorkerID),
15       FOREIGN KEY (PublicAuthID) REFERENCES PublicHealthAuthority(AuthorityID),
16       FOREIGN KEY (WorkerID) REFERENCES Person(PersonId)
17   );
18   CREATE TABLE IF NOT EXISTS ContactHistoryLog (
19       LogID INT NOT NULL AUTO_INCREMENT,
20       Date datetime,
21       AssignedWorkerID INT NOT NULL,
22       PRIMARY KEY (LogID),
23       FOREIGN KEY (AssignedWorkerID) REFERENCES PublicHealthWorker(WorkerId)
24   );
25   CREATE TABLE IF NOT EXISTS UserEvents (
```

100%   3:33

Action Output

		Time	Action
✓	1	03:17:49	CREATE TABLE IF NOT EXISTS Place (placeid INT NOT NULL AUTO_INCREMENT, placename VARCHAR(255) NOT NULL
✓	2	03:17:49	CREATE TABLE IF NOT EXISTS Person (PersonID INT NOT NULL AUTO_INCREMENT, firstName VARCHAR(255) NOT NUI
✓	3	03:17:50	CREATE TABLE IF NOT EXISTS AppUser (UserID INT NOT NULL, Birthdate date NOT NULL, AddressID INT NOT NULL,
✓	4	03:18:19	CREATE TABLE IF NOT EXISTS PublicHealthAuthority (AuthorityID INT NOT NULL AUTO_INCREMENT, AuthAddressID IN.
✓	5	03:18:19	CREATE TABLE IF NOT EXISTS PublicHealthWorker (WorkerID INT NOT NULL, Title VARCHAR(255) NOT NULL, Officel
✓	6	03:18:19	CREATE TABLE IF NOT EXISTS ContactHistoryLog (LogID INT NOT NULL AUTO_INCREMENT, Date datetime, Assigned
✓	7	03:18:19	CREATE TABLE IF NOT EXISTS UserEvents (EventID INT NOT NULL AUTO_INCREMENT, EventStartTime Datetime NOT N

Limit to 2000 rows

```
28        );
29   • ⊖ CREATE TABLE IF NOT EXISTS AppUserEmail (
30          UserID INT NOT NULL,
31          EmailID VARCHAR(255) NOT NULL,
32          PRIMARY KEY (EmailID),
33          FOREIGN KEY(UserID) REFERENCES AppUser(UserID)
34        );
35   • ⊖ CREATE TABLE IF NOT EXISTS PublicHealthAuthorityHelpline(
36          HelplineNo VARCHAR(255) NOT NULL,
37          AuthorityID INT NOT NULL,
38          PRIMARY KEY(HelplineNo),
39          FOREIGN KEY(AuthorityID) REFERENCES PublicHealthAuthority(AuthorityID)
40        );
41   • ⊖ CREATE TABLE IF NOT EXISTS Interactions (
42          InteractionID INT NOT NULL,
43          InteractingUserID INT NOT NULL,
44          VisitorID INT NOT NULL,
45          InteractionPlaceID INT NOT NULL,
46          PRIMARY KEY (InteractionID),
47          FOREIGN KEY (InteractionID) REFERENCES UserEvents(EventID),
48          FOREIGN KEY (InteractingUserID) REFERENCES AppUser(UserID),
49          FOREIGN KEY (VisitorID) REFERENCES Person(PersonID),
50          FOREIGN KEY (InteractionPlaceID) REFERENCES Place(PlaceId)
51        );
```

100%   3:51

Action Output

		Time	Action
✓	1	03:18:52	CREATE TABLE IF NOT EXISTS HealthReportCheck (ReportID INT NOT NULL AUTO_INCREMENT, Use
✓	2	03:18:52	CREATE TABLE IF NOT EXISTS Assessment (AssessID INT NOT NULL AUTO_INCREMENT, TakerID INT
✓	3	03:18:52	CREATE TABLE IF NOT EXISTS AppUserEmail (UserID INT NOT NULL, EmailID VARCHAR(255) NOT N
✓	4	03:18:52	CREATE TABLE IF NOT EXISTS PublicHealthAuthorityHelpline(HelplineNo VARCHAR(255) NOT NULL,
✓	5	03:18:52	CREATE TABLE IF NOT EXISTS Interactions (InteractionID INT NOT NULL, InteractingUserID INT NOT

```
Limit to 2000 rows
```

```
 1    CREATE TABLE IF NOT EXISTS Visit (
 2        VisitID INT NOT NULL,
 3        VisitPlaceID INT NOT NULL,
 4        VisitingUserID INT NOT NULL,
 5        PRIMARY KEY (VisitID),
 6        FOREIGN KEY (VisitID) REFERENCES UserEvents(EventID),
 7        FOREIGN KEY (VisitPlaceID) REFERENCES Place(PlaceID),
 8        FOREIGN KEY(VisitingUserID) REFERENCES AppUser(UserID)
 9    );
10    CREATE TABLE IF NOT EXISTS Notifications (
11        Nid INT NOT NULL AUTO_INCREMENT,
12        PHAAuthorityID INT NOT NULL,
13        timeStamp datetime NOT NULL,
14        OtherInformation Text,
15        PRIMARY KEY (Nid),
16        FOREIGN KEY (PHAAuthorityID) REFERENCES PublicHealthAuthority(AuthorityId)
17    );
18    CREATE TABLE IF NOT EXISTS PersonNotification (
19        Nid INT NOT NULL,
20        PersonID INT NOT NULL,
21        PRIMARY KEY (Nid, PersonID),
22        FOREIGN KEY(Nid) REFERENCES Notifications(Nid),
23        FOREIGN KEY(PersonID) REFERENCES Person(PersonID)
24    );
25    CREATE TABLE IF NOT EXISTS PersonPhone(
```

```
100%    3:30
```

Action Output

	Time	Action
✅ 1	03:18:52	CREATE TABLE IF NOT EXISTS HealthReportCheck (ReportID INT NOT NULL AUTO_INCREMENT, UserID INT NOT NUL
✅ 2	03:18:52	CREATE TABLE IF NOT EXISTS Assessment (AssessID INT NOT NULL AUTO_INCREMENT, TakerID INT NOT NULL, Co
✅ 3	03:18:52	CREATE TABLE IF NOT EXISTS AppUserEmail (UserID INT NOT NULL, EmailID VARCHAR(255) NOT NULL, PRIMARY
✅ 4	03:18:52	CREATE TABLE IF NOT EXISTS PublicHealthAuthorityHelpline(HelplineNo VARCHAR(255) NOT NULL, AuthorityID INT N
✅ 5	03:18:52	CREATE TABLE IF NOT EXISTS Interactions (InteractionID INT NOT NULL, InteractingUserID INT NOT NULL, VisitorID
✅ 6	03:19:39	CREATE TABLE IF NOT EXISTS Visit (VisitID INT NOT NULL, VisitPlaceID INT NOT NULL, VisitingUserID INT NOT NUL
✅ 7	03:19:39	CREATE TABLE IF NOT EXISTS Notifications (Nid INT NOT NULL AUTO_INCREMENT, PHAAuthorityID INT NOT NULL,
✅ 8	03:19:39	CREATE TABLE IF NOT EXISTS PersonNotification (Nid INT NOT NULL, PersonID INT NOT NULL, PRIMARY KEY (Nid,
✅ 9	03:19:39	CREATE TABLE IF NOT EXISTS PersonPhone(PersonID INT NOT NULL, PhoneNo VARCHAR(20) NOT NULL, PRIMARY

Limit to 2000 rows

```
1   INSERT INTO `Place` VALUES (1,'Ortiz','ALNA PLACE','EAST BOSTON','MA',2128,42.36467840,-71.03322720),(2,'Maynard','APPIAN PLACE','EAST BO
2   INSERT INTO `Person` VALUES (1001,'Yetta','Hammond'),(1002,'Florence','Stewart'),(1003,'Jared','Pickett'),(1004,'Jolene','Mejia'),(1005,'Abbot','Sanford'),
3   INSERT INTO `AppUser` VALUES (1001,'1941-04-10',101,1),(1002,'1980-07-01',102,1),(1003,'1934-10-31',103,1),(1004,'1981-10-19',104,1),(1005,'1931-0
4   INSERT INTO `PublicHealthAuthority` VALUES (13100,1,'Mollis Lectus Pede Institute','EAST BOSTON'),(13101,2,'Eleifend Ltd','BOSTON'),(13102,3,'Curs
5   INSERT INTO `PublicHealthWorker` VALUES (1501,'Eu Foundation','110',13104),(1502,'Elit Limited','932',13103),(1503,'Faucibus Leo Associates','708',13
6   INSERT INTO `ContactHistoryLog` VALUES (1000,'2020-07-27 00:00:00',1554),(1001,'2020-07-23 00:00:00',1548),(1002,'2020-07-20 00:00:00',1555),(100
7   INSERT INTO `UserEvents` VALUES (1,'2020-05-28 13:27:55','2020-05-29 12:02:36',1201,'semper rutrum. Fusce'),(2,'2020-07-06 00:01:05','2020-07-06 0
8   INSERT INTO `Visit` VALUES (601,78,1327),(602,89,1182),(603,123,1426),(604,135,1394),(605,39,1171),(606,55,1496),(607,118,1218),(608,4,1420),(609
9   INSERT INTO `PublicHealthAuthorityHelpline` VALUES ('(382) 353-1353',13100),('(940) 589-6537',13100),('(180) 113-1840',13101),('(180) 883-3352',1310
10  INSERT INTO `PersonPhone` VALUES (1001,'(873) 587-6084'),(1002,'(739) 621-5634'),(1003,'(637) 403-4345'),(1004,'(519) 549-1252'),(1004,'(571) 374-6
11  INSERT INTO `Notifications` VALUES (131001,13101,'2020-08-04 11:20:20','nulla. Donec non justo. Proin non'),(131002,13103,'2020-08-03 12:27:32','ege
12  INSERT INTO `PersonNotification` VALUES (131166,1001),(131252,1001),(131129,1002),(131028,1003),(131218,1003),(131064,1005),(131364,1006),(13
13  INSERT INTO `Interactions` VALUES (1,1201,1202,40),(2,1204,1205,82),(3,1207,1208,200),(4,1210,1211,169),(5,1213,1214,80),(6,1216,1217,136),(7,121
14  INSERT INTO `HealthReportCheck` VALUES (95100,1001,98.000,95.000,'sick','Positive','montes, nascetur ridiculus mus. Proin vel arcu',1550,'2021-02-10
15  INSERT INTO `Assessment` VALUES (3123,1001,0,'2020-05-29 08:37:55','Maecenas mi felis, adipiscing fringilla, porttitor vulputate, posuere vulputate, lac
16  INSERT INTO `AppUserEmail` VALUES (1001,'adipiscing.ligula@congueIn.co.uk'),(1002,'aliquam.adipiscing.lacus@gravidaPraesenteu.com'),(1002,'in.he
17
```

100%   1:17

Action Output

	Time	Action	Response

10. Query Generation, Scripts & Outputs

QUERY - 1 - A SIMPLE JOIN QUERY

Joining Tables: AppUser, Person, AppUserEmail

Goal : To find all the details of a user who tested positive in COVID-19 Drug Test

SQL: SELECT * FROM AppUser INNER JOIN Person ON AppUser.UserID=Person.PersonID INNER JOIN AppUserEmail on AppUser.UserID=AppUserEmail.UserID INNER JOIN Place on AppUser.AddressID=Place.placeid INNER JOIN HealthReportCheck on AppUser.UserId=HealthReportCheck.UserID WHERE HealthReportCheck.TestResult='positive';

Response: 153 row(s) returned

RESULT SCREENSHOTS:

• Divided into two parts

PART 1

PART 2

R-Notebook Execution

```r
library(RMySQL)
library(DBI)
library(RColorBrewer)
conn = dbConnect(MySQL(), userName="root", password="atcbtra123",
dbname="ContactTracingDB", host="localhost",port = 3306)

val1 <- dbFetch(dbSendQuery(conn,"SELECT * FROM AppUser
INNER JOIN Person ON AppUser.UserID=Person.PersonID
INNER JOIN AppUserEmail on AppUser.UserID=AppUserEmail.UserID
INNER JOIN Place on AppUser.AddressID=Place.placeid
INNER JOIN HealthReportCheck on AppUser.UserId=HealthReportCheck.UserID
WHERE HealthReportCheck.TestResult='positive';"))

## Warning in .local(conn, statement, ...): Decimal MySQL column 15 imported
as
## numeric

## Warning in .local(conn, statement, ...): Decimal MySQL column 16 imported
as
## numeric

## Warning in .local(conn, statement, ...): Decimal MySQL column 19 imported
as
## numeric
```

```
## Warning in .local(conn, statement, ...): Decimal MySQL column 20 imported
as
## numeric

val1

##    UserID  Birthdate AddressID RecoveredFromCovid PersonID  firstName
## 1    1001 1941-04-10       101                  1     1001      Yetta
## 2    1004 1981-10-19       104                  1     1004     Jolene
## 3    1005 1931-04-06       105                  0     1005      Abbot
## 4    1007 1997-02-27       107                  1     1007     Samuel
## 5    1008 1962-11-24       108                  0     1008       Kyra
## 6    1010 1973-12-17       110                  1     1010      Petra
## 7    1011 2000-12-24       111                  1     1011      Robin
## 8    1012 1953-08-19       112                  0     1012    Malcolm
## 9    1012 1953-08-19       112                  0     1012    Malcolm
## 10   1018 1946-12-07       118                  1     1018   Mercedes
## 11   1020 1968-09-06       120                  1     1020      Tasha
## 12   1021 1994-02-28       121                  1     1021     Lucian
## 13   1022 2001-03-27       122                  1     1022      Kevin
## 14   1027 1937-11-18       127                  0     1027      Plato
## 15   1029 1943-09-06       129                  1     1029    Brendan
## 16   1033 1998-02-02       133                  0     1033     Roanna
## 17   1035 1976-12-25       135                  1     1035   Kathleen
## 18   1037 2000-08-14       137                  0     1037     Hollee
## 19   1043 1986-03-27       143                  0     1043      Baker
## 20   1054 2018-07-22       154                  0     1054      April
## 21   1057 1938-09-24       157                  0     1057      Blaze
## 22   1068 1943-04-19       168                  1     1068      Alvin
## 23   1084 2006-09-11       184                  1     1084  Elizabeth
## 24   1092 1981-08-20       192                  1     1092      Elton
## 25   1234 2002-11-21       334                  1     1234     Alexis
## 26   1260 1999-05-30       360                  0     1260     Aileen
## 27   1263 1929-08-25       363                  1     1263     Xandra
## 28   1276 2001-04-02       376                  1     1276    Patrick
## 29   1251 1942-01-24       351                  1     1251      Marny
## 30   1254 1941-10-09       354                  1     1254        Eve
## 31   1255 1994-04-21       355                  1     1255    Desiree
## 32   1260 1999-05-30       360                  0     1260     Aileen
## 33   1261 1992-06-17       361                  1     1261     Damian
## 34   1262 1930-08-10       362                  1     1262    Giacomo
## 35   1262 1930-08-10       362                  1     1262    Giacomo
## 36   1263 1929-08-25       363                  1     1263     Xandra
## 37   1264 1987-01-02       364                  0     1264      Alisa
## 38   1268 1966-01-22       368                  0     1268     Laurel
## 39   1268 1966-01-22       368                  0     1268     Laurel
## 40   1270 1999-07-07       370                  1     1270      Naomi
## 41   1271 2011-02-28       371                  1     1271     Aquila
## 42   1271 2011-02-28       371                  1     1271     Aquila
## 43   1272 1933-01-11       372                  1     1272      Erich
```

```
## 44     1273 1962-09-27     373                    1     1273        Adara
## 45     1277 1948-12-17     377                    0     1277        Hyatt
## 46     1278 2004-03-10     378                    0     1278     Meredith
## 47     1283 1976-04-05     383                    1     1283     Penelope
## 48     1286 2004-10-08     386                    1     1286        Clark
## 49     1286 2004-10-08     386                    1     1286        Clark
## 50     1289 1964-03-25     389                    1     1289        Wendy
## 51     1291 1955-08-02     391                    0     1291        Magee
## 52     1292 1947-05-26     392                    1     1292       Chaney
## 53     1295 1964-02-22     395                    1     1295         Inez
## 54     1296 1970-10-17     396                    0     1296      Charity
## 55     1300 2008-10-21     400                    0     1300       Maxine
## 56     1302 1983-05-22     402                    0     1302        Vance
## 57     1306 1973-05-30     406                    0     1306       Daniel
## 58     1308 1994-06-21     408                    1     1308        Eagan
## 59     1310 2014-11-22     410                    0     1310          Dai
## 60     1314 2006-03-13     414                    1     1314        Slade
## 61     1315 1946-03-06     415                    0     1315        Nayda
## 62     1316 1931-01-29     416                    0     1316         Seth
## 63     1318 1931-03-20     418                    0     1318       Haviva
## 64     1320 1969-01-22     420                    0     1320         Cara
## 65     1321 1951-03-28     421                    0     1321        Blake
## 66     1322 1953-08-29     422                    0     1322       Deacon
## 67     1328 1951-02-15     428                    0     1328         Thor
## 68     1329 1956-06-17     429                    1     1329        Wanda
## 69     1330 2009-06-18     430                    0     1330        Debra
## 70     1335 1949-05-20     435                    0     1335       Samuel
## 71     1335 1949-05-20     435                    0     1335       Samuel
## 72     1336 1983-11-21     436                    0     1336      Isadora
## 73     1337 2014-11-30     437                    1     1337      Lareina
## 74     1338 1957-12-28     438                    1     1338        Linus
## 75     1339 1965-08-17     439                    1     1339        Bryar
## 76     1346 1970-09-15     446                    0     1346     Lysandra
## 77     1348 2000-08-31     448                    1     1348        Vielka
## 78     1354 2004-06-24     454                    1     1354     Griffith
## 79     1354 2004-06-24     454                    1     1354     Griffith
## 80     1387 1938-08-01     487                    0     1387        Yetta
## 81     1396 1960-08-28     496                    0     1396       Judith
## 82     1398 1973-02-27     498                    1     1398        Simon
## 83     1398 1973-02-27     498                    1     1398        Simon
## 84     1399 1955-08-04     499                    1     1399       Alexis
## 85     1400 2020-06-20     500                    0     1400        Belle
## 86     1401 1997-07-30     501                    1     1401        Jonah
## 87     1404 2010-04-27     504                    0     1404      Ulysses
## 88     1404 2010-04-27     504                    0     1404      Ulysses
## 89     1406 2020-10-30     506                    0     1406         Nash
## 90     1406 2020-10-30     506                    0     1406         Nash
## 91     1414 1929-09-08     514                    0     1414      Jocelyn
## 92     1417 2006-10-17     517                    0     1417       Kellie
## 93     1428 1986-11-24     528                    0     1428        Jesse
```

```
## 94    1430 1932-09-16        530                    0    1430    Raphael
## 95    1432 2001-04-11        532                    1    1432     Eliana
## 96    1433 2013-09-14        533                    1    1433   Cathleen
## 97    1434 1985-09-18        534                    0    1434 Evangeline
## 98    1435 1973-10-19        535                    1    1435    Shafira
## 99    1439 2010-10-19        539                    1    1439      Jonas
## 100   1441 1943-04-09        541                    1    1441     Lacota
## 101   1443 1949-01-17        543                    1    1443   Adrienne
## 102   1445 1971-07-29        545                    1    1445     Cailin
## 103   1446 1943-06-12        546                    1    1446      Regan
## 104   1446 1943-06-12        546                    1    1446      Regan
## 105   1447 1969-03-02        547                    0    1447       Iris
## 106   1400 2020-06-20        500                    0    1400      Belle
## 107   1401 1997-07-30        501                    1    1401      Jonah
## 108   1402 1933-07-19        502                    1    1402   Harrison
## 109   1403 2001-06-28        503                    0    1403     Teegan
## 110   1403 2001-06-28        503                    0    1403     Teegan
## 111   1408 1999-02-14        508                    1    1408       Dana
## 112   1411 2020-12-29        511                    1    1411       Ross
## 113   1414 1929-09-08        514                    0    1414    Jocelyn
## 114   1415 1936-03-16        515                    1    1415     Daquan
## 115   1423 1938-06-13        523                    0    1423   Charissa
## 116   1424 1950-01-01        524                    1    1424     Xerxes
## 117   1424 1950-01-01        524                    1    1424     Xerxes
## 118   1428 1986-11-24        528                    0    1428      Jesse
## 119   1429 2016-11-08        529                    1    1429    Harding
## 120   1432 2001-04-11        532                    1    1432     Eliana
## 121   1433 2013-09-14        533                    1    1433   Cathleen
## 122   1434 1985-09-18        534                    0    1434 Evangeline
## 123   1441 1943-04-09        541                    1    1441     Lacota
## 124   1448 1938-10-04        548                    0    1448    Jillian
## 125   1453 1957-07-08        553                    1    1453        Yeo
## 126   1456 2000-03-25        556                    0    1456      Derek
## 127   1456 2000-03-25        556                    0    1456      Derek
## 128   1457 1956-12-18        557                    0    1457     Autumn
## 129   1458 1953-09-22        558                    0    1458       Iris
## 130   1460 1956-08-27        560                    1    1460       Nero
## 131   1463 1970-03-08        563                    1    1463    Phyllis
## 132   1463 1970-03-08        563                    1    1463    Phyllis
## 133   1467 2017-01-19        567                    1    1467      Chaim
## 134   1467 2017-01-19        567                    1    1467      Chaim
## 135   1468 2002-06-02        568                    0    1468     Deanna
## 136   1469 1935-07-31        569                    1    1469      Tanya
## 137   1469 1935-07-31        569                    1    1469      Tanya
## 138   1471 1980-02-16        571                    0    1471  Alexandra
## 139   1473 1991-10-13        573                    0    1473    Xanthus
## 140   1473 1991-10-13        573                    0    1473    Xanthus
## 141   1475 1979-08-09        575                    1    1475     Quamar
## 142   1476 1985-03-02        576                    0    1476   Brittany
## 143   1479 1973-05-10        579                    1    1479      Kamal
```

```
## 144    1479 1973-05-10        579                 1      1479       Kamal
## 145    1482 2012-06-20        582                 0      1482     Randall
## 146    1485 2010-03-16        585                 0      1485       Barry
## 147    1489 2004-12-31        589                 0      1489      Bertha
## 148    1490 1960-06-26        590                 0      1490     Marsden
## 149    1490 1960-06-26        590                 0      1490     Marsden
## 150    1491 1954-07-04        591                 0      1491         Zoe
## 151    1496 1965-08-01        596                 1      1496     Mikayla
## 152    1497 1930-05-21        597                 0      1497     Ishmael
## 153    1499 1933-09-24        599                 0      1499       Wayne
##        lastName UserID                                            EmailID
placeid
## 1      Hammond   1001                   adipiscing.ligula@congueIn.co.uk
101
## 2        Mejia   1004                             sapien@nequetellus.org
104
## 3      Sanford   1005                              aliquet@ligulaelit.org
105
## 4      Flowers   1007                      dapibus.id@tellusSuspendisse.ca
107
## 5    Dickerson   1008                            ligula@scelerisquedui.org
108
## 6       Bowers   1010      Mauris.vestibulum@placeratvelitQuisque.co.uk
110
## 7     Anderson   1011                     sed.dui.Fusce@malesuadavel.co.uk
111
## 8        Simon   1012                        imperdiet@lectusCumsociis.net
112
## 9        Simon   1012                     ultrices.mauris@suscipitestac.co.uk
112
## 10        Cruz   1018                       et.malesuada.fames@urna.co.uk
118
## 11        Bush   1020                    a.tortor.Nunc@aliquetmetusurna.com
120
## 12       Klein   1021                  lacinia.vitae.sodales@necmauris.net
121
## 13        Yang   1022                            a.nunc.In@tristique.net
122
## 14      Brooks   1027                                      Donec@Curae.com
127
## 15       Price   1029                       fringilla@dictumeleifend.co.uk
129
## 16     Russell   1033                           dui.quis.accumsan@in.co.uk
133
## 17     Garrett   1035                       tincidunt.aliquam@Aeneaneget.net
135
## 18     Shields   1037                             convallis.ante@etipsum.com
137
## 19    Mcdonald   1043                      rhoncus.Nullam.velit@duinec.ca
143
```

```
## 20      Watts  1054             et.magnis.dis@Donecnonjusto.com
154
## 21  Christian  1057                        urna.Ut@euerat.com
157
## 22       Cash  1068         netus.et.malesuada@ametdiameu.org
168
## 23     Mcleod  1084    ultricies.ligula@ametconsectetuer.co.uk
184
## 24       Bond  1092          libero@DonectinciduntDonec.ca
192
## 25    Mcguire  1234                    justo@convallisest.net
334
## 26       Dean  1260           lorem.vehicula@pharetrafelis.ca
360
## 27       Kane  1263    velit.Quisque.varius@metusAliquamerat.org
363
## 28       Best  1276            nibh@vulputateullamcorper.edu
376
## 29  Middleton  1251  fringilla.porttitor.vulputate@dapibusrutrum.edu
351
## 30  Valentine  1254         molestie.sodales@idmollisnec.edu
354
## 31     Farley  1255                nunc.nulla@turpisnec.ca
355
## 32       Dean  1260           lorem.vehicula@pharetrafelis.ca
360
## 33      Green  1261                      non@quisarcuvel.ca
361
## 34      Tyler  1262         non.ante.bibendum@ligulatortor.edu
362
## 35      Tyler  1262     nonummy.ultricies.ornare@dictumeu.co.uk
362
## 36       Kane  1263    velit.Quisque.varius@metusAliquamerat.org
363
## 37      Nixon  1264                         rhoncus@elit.ca
364
## 38     Joyner  1268       dolor.dapibus.gravida@telluseu.com
368
## 39     Joyner  1268             mauris.Morbi.non@nuncac.ca
368
## 40      Ayers  1270   luctus.vulputate.nisi@sempereratin.com
370
## 41       Shaw  1271               dictum@afacilisisnon.com
371
## 42       Shaw  1271               ipsum@parturientmontes.net
371
## 43    Sampson  1272               nunc@placeratorcilacus.net
372
## 44    Bernard  1273      arcu.Aliquam@lectusrutrumurna.edu
373
```

```
## 45       Riggs    1277               mauris.Integer@tortornibh.org
377
## 46      Stokes    1278               lectus.quis.massa@diam.org
378
## 47        Burt    1283           dictum.sapien.Aenean@Vivamus.co.uk
383
## 48       Ewing    1286       aliquet.lobortis.nisi@mattisCraseget.com
386
## 49       Ewing    1286           Suspendisse@ornareegestasligula.com
386
## 50        Best    1289                   eleifend@Proinsed.edu
389
## 51     Stewart    1291                      Proin.vel@amet.ca
391
## 52        Bird    1292       nec.urna.suscipit@Integerinmagna.co.uk
392
## 53      Mullen    1295                  pharetra.Nam.ac@amet.ca
395
## 54     Wheeler    1296           malesuada.augue.ut@purus.edu
396
## 55        Knox    1300   libero.at.auctor@imperdietullamcorperDuis.org
400
## 56     Aguirre    1302                      fringilla@nunc.edu
402
## 57        Witt    1306               arcu.Curabitur@vitae.ca
406
## 58       Downs    1308         porttitor.scelerisque.neque@et.ca
408
## 59       Moses    1310               molestie.Sed.id@montes.net
410
## 60     Hubbard    1314           Vestibulum.ut.eros@sodales.net
414
## 61       Foley    1315           orci@Pellentesquehabitant.edu
415
## 62        Todd    1316               sem@odiosagittissemper.com
416
## 63     Pickett    1318   Suspendisse.non.leo@dapibusligulaAliquam.net
418
## 64       Patel    1320           tempor.augue@magnaDuisdignissim.edu
420
## 65       Eaton    1321       varius.Nam.porttitor@pulvinararcuet.org
421
## 66        Howe    1322               ultricies@inconsectetuer.org
422
## 67      Howell    1328           leo.Morbi@feugiatplacerat.com
428
## 68     Jenkins    1329               risus@nibhvulputate.ca
429
## 69   Zimmerman    1330               tristique.neque@non.org
430
```

```
## 70      Roach   1335                           in.felis.Nulla@sed.co.uk
435
## 71      Roach   1335                          luctus.lobortis@risus.edu
435
## 72  Frederick   1336                          urna@loremloremluctus.com
436
## 73  Wilkinson   1337   mattis.semper.dui@montesnasceturridiculus.com
437
## 74     Riddle   1338                          facilisis.vitae@dolor.edu
438
## 75     Harper   1339                cursus@facilisisloremtristique.net
439
## 76  Hernandez   1346          tellus.Suspendisse@Etiamgravidamolestie.ca
446
## 77       Sims   1348             torquent.per.conubia@Vestibulumut.com
448
## 78     Austin   1354                          dictum.eleifend@fames.net
454
## 79     Austin   1354         In.condimentum@nasceturridiculusmus.com
454
## 80       Odom   1387                                sed@adipiscing.org
487
## 81     Berger   1396                aliquet.odio@sitametdapibus.co.uk
496
## 82    Sellers   1398                Nunc@convallisconvallisdolor.edu
498
## 83    Sellers   1398                     Praesent@turpisAliquam.ca
498
## 84      Mccoy   1399                             velit.in@amet.com
499
## 85   Atkinson   1400              nunc.interdum@vitaenibhDonec.ca
500
## 86      Olson   1401                             egestas@urna.com
501
## 87  Maldonado   1404   diam@adipiscingfringillaporttitor.co.uk
504
## 88  Maldonado   1404                            non@nonenim.com
504
## 89       Moss   1406               enim@tellusNunclectus.co.uk
506
## 90       Moss   1406                   vitae.velit@semmagna.edu
506
## 91     Spence   1414                      Vivamus.rhoncus@dui.edu
514
## 92   Shepherd   1417                      dui.augue.eu@sedest.com
517
## 93       Ruiz   1428             porttitor.scelerisque.neque@id.net
528
## 94    Wallace   1430         arcu.Vestibulum.ut@lobortisaugue.co.uk
530
```

```
## 95       Mckee  1432            vestibulum.nec.euismod@Maurisquisturpis.net
532
## 96     Beasley  1433                      eleifend.non@sempererat.co.uk
533
## 97      Franks  1434                   at.velit.Cras@euismodindolor.com
534
## 98     Johnson  1435                                        eu@lorem.org
535
## 99    Campbell  1439                             vel@nonnisiAenean.org
539
## 100      Hodge  1441     ante.bibendum.ullamcorper@facilisisvitae.net
541
## 101       Bird  1443           vulputate.nisi@natoquepenatibuset.org
543
## 102   Contreras  1445           vitae.orci.Phasellus@nectempus.co.uk
545
## 103       Soto  1446                    blandit.enim@vellectusCum.ca
546
## 104       Soto  1446          magna.a.neque@posuerecubiliaCurae.net
546
## 105     Malone  1447               nisl.Maecenas.malesuada@sem.org
547
## 106   Atkinson  1400               nunc.interdum@vitaenibhDonec.ca
500
## 107      Olson  1401                                    egestas@urna.com
501
## 108    Whitaker  1402                                 et@ridiculusmus.ca
502
## 109    Cochran  1403                                   Sed@Duissit.co.uk
503
## 110    Cochran  1403                                    sit@lorem.co.uk
503
## 111    Parrish  1408                                   at@vitaevelit.edu
508
## 112     Mueller  1411               mauris@velitegestaslacinia.com
511
## 113      Spence  1414                           Vivamus.rhoncus@dui.edu
514
## 114   Jefferson  1415       cursus.diam.at@ullamcorperDuiscursus.com
515
## 115 Strickland  1423               vitae.posuere.at@Uttincidunt.ca
523
## 116     Holden  1424               diam.luctus@Vivamusnonlorem.ca
524
## 117     Holden  1424       turpis.Aliquam@lectusasollicitudin.co.uk
524
## 118       Ruiz  1428             porttitor.scelerisque.neque@id.net
528
## 119     Palmer  1429                           tortor.at@Aeneansed.net
529
```

```
## 120     Mckee  1432       vestibulum.nec.euismod@Maurisquisturpis.net
532
## 121    Beasley  1433               eleifend.non@sempererat.co.uk
533
## 122     Franks  1434              at.velit.Cras@euismodindolor.com
534
## 123      Hodge  1441  ante.bibendum.ullamcorper@facilisisvitae.net
541
## 124     Rogers  1448               metus.Aenean.sed@liberoat.edu
548
## 125    William  1453             lectus.convallis.est@turpis.ca
553
## 126   Fletcher  1456                          erat.eget@utmi.edu
556
## 127   Fletcher  1456                    Sed.nulla@aliquet.co.uk
556
## 128    Marquez  1457                  dictum@ametconsectetuer.com
557
## 129     Willis  1458             convallis.in@parturientmontes.org
558
## 130     Hunter  1460              molestie.tortor.nibh@porttitor.net
560
## 131      Sharp  1463                  massa.non.ante@lorem.co.uk
563
## 132      Sharp  1463      Pellentesque.ut.ipsum@enimgravidasit.ca
563
## 133    Montoya  1467             Duis.volutpat@congueInscelerisque.org
567
## 134    Montoya  1467                  libero.dui.nec@aclibero.edu
567
## 135       Lane  1468      lectus.rutrum.urna@metusVivamus.co.uk
568
## 136     Stuart  1469                              sit.amet@a.ca
569
## 137     Stuart  1469      tellus.Aenean.egestas@egestasnunc.net
569
## 138      Hodge  1471               ac.mattis@vitaerisusDuis.ca
571
## 139     Horton  1473              in.felis@placerataugue.co.uk
573
## 140     Horton  1473                porttitor@turpisvitaepurus.com
573
## 141     Oneill  1475                          enim@Class.co.uk
575
## 142   Thornton  1476             eros.nec.tellus@ligulaelit.com
576
## 143     Walter  1479             eget.laoreet.posuere@aliquet.net
579
## 144     Walter  1479                            nunc.sed@at.edu
579
```

```
## 145      Colon   1482                        adipiscing.elit@tempus.net
582
## 146       Lamb   1485        quis.diam@Suspendissecommodotincidunt.co.uk
585
## 147    Parsons   1489        facilisis.Suspendisse@tellusSuspendisse.ca
589
## 148       Bell   1490        bibendum.fermentum.metus@lectusNullam.ca
590
## 149       Bell   1490                        quis.arcu@dolortempus.edu
590
## 150     Daniel   1491                        Sed.id@fringillami.co.uk
591
## 151      Lynch   1496                vulputate.risus.a@maurissapien.org
596
## 152       Byrd   1497                        in.lobortis@amet.org
597
## 153      Burks   1499 condimentum.eget.volutpat@loremDonecelementum.edu
599
##                placename           streetarea          city state  zip
## 1            Mclaughlin          ACADIA STREET SOUTH BOSTON    MA 2127
## 2              Santiago          ARDEE STREET   EAST BOSTON    MA 2128
## 3          Abdul Common            ACORN WAY     DARTMOUTH    MA 2748
## 4         Blanda Unions         CEDAR AVENUE     DARTMOUTH    MA 2748
## 5         Caden Circles           EAGLE DRIVE     DARTMOUTH    MA 2748
## 6           Rogahn Manor        OLD JETTY ROAD     DARTMOUTH    MA 2748
## 7           Scotty Alley       POKANOKET LANE     DARTMOUTH    MA 2748
## 8                Holden          ACORN STREET        BOSTON    MA 2108
## 9                Holden          ACORN STREET        BOSTON    MA 2108
## 10         Sawayn Knoll    PLAINS FIELD DRIVE     DARTMOUTH    MA 2748
## 11               Holder      ALBEMARLE STREET        BOSTON    MA 2115
## 12               Slater         ANTRIM STREET   EAST BOSTON    MA 2128
## 13               Conway      ARLINGTON STREET        BOSTON    MA 2116
## 14         Bednar Fords      BITTERSWEET LANE     DARTMOUTH    MA 2790
## 15         Ebert Divide        GOSNOLD AVENUE     DARTMOUTH    MA 2748
## 16         Shaina Mount       POKANOKET LANE     DARTMOUTH    MA 2748
## 17               Clarke ANTHONY J GRIECO TERRACE   EAST BOSTON    MA 2128
## 18               Harvey         BOWDOIN STREET        BOSTON    MA 2114
## 19       Kertzmann Camp        MATTAREST LANE     DARTMOUTH    MA 2748
## 20          Kylee Locks    MEADOW SHORES ROAD     DARTMOUTH    MA 2748
## 21                 Cruz         ACADIA STREET SOUTH BOSTON    MA 2127
## 22       Shanahan Ford        POKANOKET LANE     DARTMOUTH    MA 2748
## 23      Nienow Turnpike       NORTH SHORE DRIVE     DARTMOUTH    MA 2748
## 24         Effertz Ford        GOSNOLD AVENUE     DARTMOUTH    MA 2748
## 25  Pfannerstill Meadows    NORTH SHORE DRIVE     DARTMOUTH    MA 2748
## 26          Lind Estates        NAUSHON AVENUE     DARTMOUTH    MA 2748
## 27          Lynch Street        NAUSHON AVENUE     DARTMOUTH    MA 2748
## 28               Brennan      ATLANTIC AVENUE        BOSTON    MA 2110
## 29           Montgomery       ANDERSON STREET        BOSTON    MA 2114
## 30        Schmitt Coves    PLAINS FIELD DRIVE     DARTMOUTH    MA 2748
## 31               Vinson          ASHLEY STREET   EAST BOSTON    MA 2128
```

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## 32       Lind Estates       NAUSHON AVENUE       DARTMOUTH   MA 2748
## 33    Moshe Extension      NONQUITT AVENUE       DARTMOUTH   MA 2748
## 34         Nicholson      ANDERSON STREET          BOSTON   MA 2114
## 35         Nicholson      ANDERSON STREET          BOSTON   MA 2114
## 36       Lynch Street      NAUSHON AVENUE       DARTMOUTH   MA 2748
## 37    Mosciski Gardens     NONQUITT AVENUE       DARTMOUTH   MA 2748
## 38            Snider       BRADDOCK PARK           BOSTON   MA 2116
## 39            Snider       BRADDOCK PARK           BOSTON   MA 2116
## 40     Hermiston Road        JORDAN ROAD       DARTMOUTH   MA 2748
## 41       Mueller Pass     NONQUITT AVENUE       DARTMOUTH   MA 2748
## 42       Mueller Pass     NONQUITT AVENUE       DARTMOUTH   MA 2748
## 43      Morar Common     NONQUITT AVENUE       DARTMOUTH   MA 2748
## 44      Norberto Glen   NORTH SHORE DRIVE       DARTMOUTH   MA 2748
## 45      Abbott Island        JORDAN ROAD       DARTMOUTH   MA 2748
## 46         Macie Path      NAUSHON AVENUE       DARTMOUTH   MA 2748
## 47      Mike Mountain     NONQUITT AVENUE       DARTMOUTH   MA 2748
## 48       Moen Meadows     NONQUITT AVENUE       DARTMOUTH   MA 2748
## 49       Moen Meadows     NONQUITT AVENUE       DARTMOUTH   MA 2748
## 50      Jakob Freeway   LITTLE RIVER ROAD       DARTMOUTH   MA 2748
## 51      Osinski Greens   NORTH SHORE DRIVE       DARTMOUTH   MA 2748
## 52    Schroeder Centers  PLAINS FIELD DRIVE      DARTMOUTH   MA 2748
## 53        Madisen Row     NAUSHON AVENUE       DARTMOUTH   MA 2748
## 54         Mozell Way    NONQUITT AVENUE       DARTMOUTH   MA 2748
## 55     Michele Points    NONQUITT AVENUE       DARTMOUTH   MA 2748
## 56              Tate     ANDERSON STREET          BOSTON   MA 2114
## 57     Mozelle Courts    NONQUITT AVENUE       DARTMOUTH   MA 2748
## 58         Fadel Mall   HETTY GREEN DRIVE       DARTMOUTH   MA 2748
## 59        Moses Inlet    NONQUITT AVENUE       DARTMOUTH   MA 2748
## 60       Luna Highway     NAUSHON AVENUE       DARTMOUTH   MA 2748
## 61      Monahan Street    NONQUITT AVENUE       DARTMOUTH   MA 2748
## 62      London Bypass     NAUSHON AVENUE       DARTMOUTH   MA 2748
## 63           Hendrix       ASHLEY STREET    EAST BOSTON   MA 2128
## 64      Russel Unions   PARDON HILL ROAD       DARTMOUTH   MA 2748
## 65     Flatley Lights   HETTY GREEN DRIVE       DARTMOUTH   MA 2790
## 66        Madie Ville     NAUSHON AVENUE       DARTMOUTH   MA 2748
## 67            Lowery           A STREET   SOUTH BOSTON   MA 2127
## 68      Eusebio Street   HETTY GREEN DRIVE       DARTMOUTH   MA 2748
## 69       Littel Ranch     NAUSHON AVENUE       DARTMOUTH   MA 2748
## 70       Madalyn Road     NAUSHON AVENUE       DARTMOUTH   MA 2748
## 71       Madalyn Road     NAUSHON AVENUE       DARTMOUTH   MA 2748
## 72         Merl Plaza    NONQUITT AVENUE       DARTMOUTH   MA 2748
## 73        Pennington   BENNINGTON STREET    EAST BOSTON   MA 2128
## 74      Ernesto Ville   HETTY GREEN DRIVE       DARTMOUTH   MA 2790
## 75           Luz Fall     NAUSHON AVENUE       DARTMOUTH   MA 2748
## 76          Melendez    ATLANTIC AVENUE          BOSTON   MA 2109
## 77        Mclaughlin           A STREET   SOUTH BOSTON   MA 2127
## 78   Dibbert Mountain       GAFFNEY ROAD       DARTMOUTH   MA 2748
## 79   Dibbert Mountain       GAFFNEY ROAD       DARTMOUTH   MA 2748
## 80      D'Amore Shoal       GAFFNEY ROAD       DARTMOUTH   MA 2748
## 81     Ullrich Cliffs  ROCK O'DUNDEE ROAD      DARTMOUTH   MA 2748
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## 82       Arjun Turnpike     BARNEY'S JOY ROAD     DARTMOUTH   MA 2748
## 83       Arjun Turnpike     BARNEY'S JOY ROAD     DARTMOUTH   MA 2748
## 84      Cummings Square         GAFFNEY ROAD      DARTMOUTH   MA 2748
## 85        Adams Forest      ALLENS NECK ROAD      DARTMOUTH   MA 2748
## 86      D'Amore Circles        GAFFNEY ROAD       DARTMOUTH   MA 2748
## 87         Dagmar Club         GAFFNEY ROAD       DARTMOUTH   MA 2748
## 88         Dagmar Club         GAFFNEY ROAD       DARTMOUTH   MA 2748
## 89            Wilkins         ADDISON STREET    EAST BOSTON   MA 2128
## 90            Wilkins         ADDISON STREET    EAST BOSTON   MA 2128
## 91          Gwen Vista       HORSENECK ROAD      DARTMOUTH   MA 2748
## 92        Crystel Spur         GAFFNEY ROAD      DARTMOUTH   MA 2748
## 93     Katelyn Overpass     LITTLE RIVER ROAD    DARTMOUTH   MA 2748
## 94        Hahn Villages      HORSENECK ROAD      DARTMOUTH   MA 2748
## 95        Angus Square      BARNEY'S JOY ROAD     DARTMOUTH   MA 2748
## 96        Jackson Flats     LITTLE RIVER ROAD     DARTMOUTH   MA 2748
## 97      Katheryn Gardens    LITTLE RIVER ROAD     DARTMOUTH   MA 2748
## 98          Jaron Grove     LITTLE RIVER ROAD     DARTMOUTH   MA 2748
## 99       Therese Bypass     ROCK O'DUNDEE ROAD    DARTMOUTH   MA 2748
## 100          Davis Port        GAFFNEY ROAD      DARTMOUTH   MA 2748
## 101        Thaddeus Ramp    ROCK O'DUNDEE ROAD    DARTMOUTH   MA 2748
## 102       Hilpert Points        JORDAN ROAD      DARTMOUTH   MA 2748
## 103       Hoeger Springs        JORDAN ROAD      DARTMOUTH   MA 2748
## 104       Hoeger Springs        JORDAN ROAD      DARTMOUTH   MA 2748
## 105       Delores Island       GAFFNEY ROAD      DARTMOUTH   MA 2748
## 106         Adams Forest     ALLENS NECK ROAD     DARTMOUTH   MA 2748
## 107      D'Amore Circles        GAFFNEY ROAD     DARTMOUTH   MA 2748
## 108       Raynor Branch        OCEAN AVENUE      DARTMOUTH   MA 2748
## 109              Farmer      ADDISON STREET     EAST BOSTON   MA 2128
## 110              Farmer      ADDISON STREET     EAST BOSTON   MA 2128
## 111  Heidenreich Prairie        JORDAN ROAD      DARTMOUTH   MA 2748
## 112                Ryan     ARLINGTON STREET          BOSTON   MA 2116
## 113          Gwen Vista      HORSENECK ROAD      DARTMOUTH   MA 2748
## 114               Scott      ADDISON STREET     EAST BOSTON   MA 2128
## 115             Gardner     ARLINGTON STREET          BOSTON   MA 2116
## 116             Rosales        ATHENS STREET   SOUTH BOSTON   MA 2127
## 117             Rosales        ATHENS STREET   SOUTH BOSTON   MA 2127
## 118     Katelyn Overpass    LITTLE RIVER ROAD    DARTMOUTH   MA 2748
## 119              Albert        ATHENS STREET   SOUTH BOSTON   MA 2127
## 120        Angus Square     BARNEY'S JOY ROAD    DARTMOUTH   MA 2748
## 121        Jackson Flats    LITTLE RIVER ROAD    DARTMOUTH   MA 2748
## 122     Katheryn Gardens    LITTLE RIVER ROAD    DARTMOUTH   MA 2748
## 123          Davis Port        GAFFNEY ROAD     DARTMOUTH   MA 2748
## 124     Gulgowski Shores     HORSENECK ROAD     DARTMOUTH   MA 2748
## 125             Pacheco       BEACON STREET           BOSTON   MA 2116
## 126             Wallace      BAY STATE ROAD           BOSTON   MA 2215
## 127             Wallace      BAY STATE ROAD           BOSTON   MA 2215
## 128    Daugherty Mission       GAFFNEY ROAD     DARTMOUTH   MA 2790
## 129              Bonner      BAY STATE ROAD           BOSTON   MA 2215
## 130           Hahn Wells     HORSENECK ROAD     DARTMOUTH   MA 2748
## 131               Morin      BAY STATE ROAD           BOSTON   MA 2215
```

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## 132                Morin             BAY STATE ROAD            BOSTON   MA 2215
## 133           Cunningham             BAY STATE ROAD            BOSTON   MA 2215
## 134           Cunningham             BAY STATE ROAD            BOSTON   MA 2215
## 135       Kailyn Streets          LITTLE RIVER ROAD         DARTMOUTH   MA 2748
## 136         Jermey Drive          LITTLE RIVER ROAD         DARTMOUTH   MA 2748
## 137         Jermey Drive          LITTLE RIVER ROAD         DARTMOUTH   MA 2748
## 138              Hendrix           BOYLSTON STREET            BOSTON   MA 2116
## 139               Brooks             ALBANY STREET            BOSTON   MA 2118
## 140               Brooks             ALBANY STREET            BOSTON   MA 2118
## 141           Deven Mall             GAFFNEY ROAD         DARTMOUTH   MA 2748
## 142             Richards                 A STREET      SOUTH BOSTON   MA 2210
## 143         Tina Corners        ROCK O'DUNDEE ROAD         DARTMOUTH   MA 2748
## 144         Tina Corners        ROCK O'DUNDEE ROAD         DARTMOUTH   MA 2748
## 145       Tristian Spurs        ROCK O'DUNDEE ROAD         DARTMOUTH   MA 2748
## 146           Hilda Hill              JORDAN ROAD         DARTMOUTH   MA 2748
## 147        Hettinger Run              JORDAN ROAD         DARTMOUTH   MA 2748
## 148         Hickle Vista              JORDAN ROAD         DARTMOUTH   MA 2748
## 149         Hickle Vista              JORDAN ROAD         DARTMOUTH   MA 2748
## 150         Hilll Drives              JORDAN ROAD         DARTMOUTH   MA 2748
## 151     Armstrong Summit         BARNEY'S JOY ROAD         DARTMOUTH   MA 2748
## 152                 Lynn             ATHENS STREET      SOUTH BOSTON   MA 2127
## 153              Justice             ATHENS STREET      SOUTH BOSTON   MA 2127
##      latitude longitude ReportID UserID Temperature OxygenLevel
HealthStatus
## 1   42.33783 -71.03014    95100   1001        98.0          95
sick
## 2   42.36614 -71.03027    95103   1004        98.5          96
sick
## 3   41.55993 -70.98651    95104   1005        98.0          98
healthy
## 4   41.54827 -70.99751    95106   1007        97.0          98
healthy
## 5   41.54494 -70.94545    95107   1008        98.0          94
sick
## 6   41.55804 -71.00510    95109   1010        98.0          98
healthy
## 7   41.56353 -70.93987    95110   1011        98.5          95
sick
## 8   42.35751 -71.06910    95111   1012        99.5          95
healthy
## 9   42.35751 -71.06910    95111   1012        99.5          95
healthy
## 10  41.54671 -70.95761    95117   1018        98.0          95
healthy
## 11  42.34227 -71.08311    95119   1020        99.0          97
sick
## 12  42.38766 -71.00549    95120   1021        99.0          98
sick
## 13  42.35442 -71.07224    95121   1022        97.5          97
healthy
```

```
## 14   41.55385 -70.95275      95126   1027        98.5         95
sick
## 15   41.53348 -70.94778      95128   1029        99.0         95
healthy
## 16   41.56335 -70.93901      95132   1033        96.5         84
healthy
## 17   42.37259 -71.03666      95134   1035        97.0         75
sick
## 18   42.36040 -71.06210      95136   1037        98.0         97
healthy
## 19   41.54783 -70.93632      95142   1043        98.0         97
healthy
## 20   41.53695 -70.94954      95153   1054        99.0         96
sick
## 21   42.33788 -71.02983      95156   1057        98.0         96
healthy
## 22   41.56278 -70.93717      95167   1068        98.5         96
sick
## 23   41.54496 -70.93781      95183   1084        99.5         97
healthy
## 24   41.53377 -70.94789      95191   1092       107.0         94
sick
## 25   41.54407 -70.93521      95233   1234        97.0         75
sick
## 26   41.53039 -70.94818      95259   1260        96.5         97
sick
## 27   41.52980 -70.94854      95262   1263        97.5         96
sick
## 28   42.36311 -71.05134      95275   1276        97.5         95
sick
## 29   42.35992 -71.06791      95300   1251        97.0         98
sick
## 30   41.54787 -70.96409      95303   1254        99.5         95
sick
## 31   42.38793 -71.00591      95304   1255        97.0         98
sick
## 32   41.53039 -70.94818      95309   1260        97.0         98
sick
## 33   41.55912 -70.93890      95310   1261       108.0         97
sick
## 34   42.35979 -71.06761      95311   1262        96.5         94
sick
## 35   42.35979 -71.06761      95311   1262        96.5         94
sick
## 36   41.52980 -70.94854      95312   1263        97.5         95
sick
## 37   41.55902 -70.94009      95313   1264       106.5         97
sick
## 38   42.34478 -71.07900      95317   1268       100.5         98
sick
```

```
## 39   42.34478 -71.07900     95317    1268       100.5         98
sick
## 40   41.53033 -70.99872     95319    1270       105.0         97
sick
## 41   41.55878 -70.93945     95320    1271        97.0         98
sick
## 42   41.55878 -70.93945     95320    1271        97.0         98
sick
## 43   41.55859 -70.93992     95321    1272        96.5         94
sick
## 44   41.54410 -70.93302     95322    1273       101.5         97
sick
## 45   41.52978 -70.99783     95326    1277        98.0         95
sick
## 46   41.53064 -70.94818     95327    1278        96.5         98
sick
## 47   41.55690 -70.93862     95332    1283        98.0         94
sick
## 48   41.55723 -70.93841     95335    1286       105.0         96
sick
## 49   41.55723 -70.93841     95335    1286       105.0         96
sick
## 50   41.53921 -70.95557     95338    1289       108.0         75
sick
## 51   41.54322 -70.93409     95340    1291        98.5         95
sick
## 52   41.54661 -70.96524     95341    1292        98.0         95
sick
## 53   41.53091 -70.94825     95344    1295       100.0         94
sick
## 54   41.55720 -70.93778     95345    1296        96.5         66
sick
## 55   41.55652 -70.93817     95349    1300        98.0         96
sick
## 56   42.35943 -71.06788     95351    1302        97.0         84
sick
## 57   41.55672 -70.93767     95355    1306        96.5         95
sick
## 58   41.54325 -70.93685     95357    1308        99.0         96
sick
## 59   41.55653 -70.93749     95359    1310        99.5         94
sick
## 60   41.53170 -70.94832     95363    1314        98.5         94
sick
## 61   41.55610 -70.93719     95364    1315       106.0         75
sick
## 62   41.53058 -70.94860     95365    1316       102.5         95
sick
## 63   42.38849 -71.00721     95367    1318        98.0         95
sick
```

```
## 64  41.55982 -70.98294   95369   1320      98.5        97
sick
## 65  41.54220 -70.93412   95370   1321      98.0        96
sick
## 66  41.53085 -70.94866   95371   1322     105.0        95
sick
## 67  42.34217 -71.05541   95377   1328     103.0        97
sick
## 68  41.54201 -70.93349   95378   1329     101.5        66
sick
## 69  41.53112 -70.94873   95379   1330      98.5        97
sick
## 70  41.53141 -70.94877   95384   1335      98.5        84
sick
## 71  41.53141 -70.94877   95384   1335      98.5        84
sick
## 72  41.55852 -70.93662   95385   1336      97.5        98
sick
## 73  42.37599 -71.03639   95386   1337      97.0        97
sick
## 74  41.54162 -70.93254   95387   1338      99.0        96
sick
## 75  41.53283 -70.94865   95388   1339      99.0        95
sick
## 76  42.36258 -71.05119   95395   1346      99.5        94
sick
## 77  42.34245 -71.05507   95397   1348      99.5        97
sick
## 78  41.55113 -70.99462   95403   1354      97.5        98
sick
## 79  41.55113 -70.99462   95403   1354      97.5        98
sick
## 80  41.55307 -70.99491   95436   1387      98.5        94
sick
## 81  41.56157 -70.96368   95445   1396      98.0        66
sick
## 82  41.52595 -70.99133   95447   1398      98.5        66
sick
## 83  41.52595 -70.99133   95447   1398      98.5        66
sick
## 84  41.55279 -70.99723   95448   1399     100.0        94
sick
## 85  41.53297 -71.01167   95449   1400      98.5        98
sick
## 86  41.55246 -70.99845   95450   1401     108.0        96
sick
## 87  41.55355 -71.00004   95453   1404     104.5        84
sick
## 88  41.55355 -71.00004   95453   1404     104.5        84
sick
```

```
## 89  42.38536 -71.01672     95455   1406       100.5        96
sick
## 90  42.38536 -71.01672     95455   1406       100.5        96
sick
## 91  41.56369 -71.00667     95463   1414       101.5        94
sick
## 92  41.55438 -70.99369     95466   1417       104.0        96
sick
## 93  41.53842 -70.96316     95477   1428        99.0        98
sick
## 94  41.56220 -71.00441     95479   1430        97.0        98
sick
## 95  41.52757 -70.99277     95481   1432        97.0        94
sick
## 96  41.53669 -70.96220     95482   1433        98.5        97
sick
## 97  41.53786 -70.96400     95483   1434        97.5        94
sick
## 98  41.53513 -70.96088     95484   1435        97.5        98
sick
## 99  41.55926 -70.96511     95488   1439        98.0        94
sick
## 100 41.55719 -70.99277     95490   1441        99.0        97
sick
## 101 41.55903 -70.96608     95492   1443       104.0        84
sick
## 102 41.52453 -70.99495     95494   1445        96.5        95
sick
## 103 41.52262 -70.99831     95495   1446        98.0        97
sick
## 104 41.52262 -70.99831     95495   1446        98.0        97
sick
## 105 41.55760 -70.99345     95496   1447        99.5        94
sick
## 106 41.53297 -71.01167     95500   1400        98.5        94
sick
## 107 41.55246 -70.99845     95501   1401       106.5        94
sick
## 108 41.53478 -70.95081     95502   1402        97.0        97
sick
## 109 42.38543 -71.01708     95503   1403        96.5        97
sick
## 110 42.38543 -71.01708     95503   1403        96.5        97
sick
## 111 41.52635 -71.00012     95508   1408        98.5        75
sick
## 112 42.34890 -71.06974     95511   1411        97.5        96
sick
## 113 41.56369 -71.00667     95514   1414        97.5        95
sick
```

```
## 114 42.38528 -71.01644    95515    1415        97.5        75
sick
## 115 42.34861 -71.06959    95523    1423       106.0        98
sick
## 116 42.34089 -71.05275    95524    1424       100.5        94
sick
## 117 42.34089 -71.05275    95524    1424       100.5        94
sick
## 118 41.53842 -70.96316    95528    1428       107.5        94
sick
## 119 42.34076 -71.05253    95529    1429        96.5        98
sick
## 120 41.52757 -70.99277    95532    1432        96.5        94
sick
## 121 41.53669 -70.96220    95533    1433        98.0        66
healthy
## 122 41.53786 -70.96400    95534    1434        99.5        96
sick
## 123 41.55719 -70.99277    95541    1441        99.0        97
sick
## 124 41.56072 -71.00856    95548    1448       105.5        94
sick
## 125 42.35428 -71.07773    95553    1453        99.5        95
sick
## 126 42.35074 -71.10243    95556    1456        97.5        95
sick
## 127 42.35074 -71.10243    95556    1456        97.5        95
sick
## 128 41.55823 -70.99445    95557    1457        99.0        94
sick
## 129 42.35034 -71.10255    95558    1458        97.0        96
sick
## 130 41.55994 -71.00938    95560    1460        99.5        97
sick
## 131 42.35037 -71.10280    95563    1463        97.5        95
healthy
## 132 42.35037 -71.10280    95563    1463        97.5        95
healthy
## 133 42.35077 -71.10284    95567    1467        97.0        66
sick
## 134 42.35077 -71.10284    95567    1467        97.0        66
sick
## 135 41.53636 -70.96724    95568    1468       103.5        75
sick
## 136 41.53625 -70.96755    95569    1469        97.5        95
sick
## 137 41.53625 -70.96755    95569    1469        97.5        95
sick
## 138 42.35207 -71.06832    95571    1471        99.0        95
sick
```

```
## 139 42.34531 -71.06183    95573   1473      96.5        95
sick
## 140 42.34531 -71.06183    95573   1473      96.5        95
sick
## 141 41.55845 -70.99715    95575   1475      97.5        98
sick
## 142 42.34671 -71.05165    95576   1476      99.5        96
sick
## 143 41.56236 -70.97138    95579   1479     107.5        97
sick
## 144 41.56236 -70.97138    95579   1479     107.5        97
sick
## 145 41.56311 -70.97161    95582   1482     103.0        95
sick
## 146 41.52112 -70.99134    95585   1485      98.5        84
sick
## 147 41.51941 -70.99708    95589   1489      99.0        94
sick
## 148 41.51959 -70.99181    95590   1490      99.5        97
sick
## 149 41.51959 -70.99181    95590   1490      99.5        97
sick
## 150 41.51788 -70.99434    95591   1491     107.0        98
sick
## 151 41.53975 -70.98590    95596   1496      98.0        97
sick
## 152 42.33772 -71.04779    95597   1497     100.5        95
sick
## 153 42.33766 -71.04807    95599   1499      99.5        95
sick
##      TestResult
Descriptions
## 1     Positive                    montes, nascetur ridiculus mus. Proin vel
arcu
## 2     Positive                          nascetur ridiculus mus. Proin vel
arcu
## 3     Positive    vehicula. Pellentesque tincidunt tempus risus. Donec
egestas.
## 4     Positive                                     magna sed dui. Fusce
aliquam,
## 5     Positive       dignissim. Maecenas ornare egestas ligula. Nullam
feugiat
## 6     Positive                             ac metus vitae velit egestas
lacinia.
## 7     Positive                        ac, eleifend vitae, erat. Vivamus nisi.
Mauris
## 8     Positive                        nec ligula consectetuer rhoncus. Nullam
velit
## 9     Positive                        nec ligula consectetuer rhoncus. Nullam
velit
```

```
## 10    Positive                               dolor. Nulla semper tellus id
nunc
## 11    Positive      luctus et ultrices posuere cubilia Curae; Donec
tincidunt.
## 12    Positive                    ligula. Nullam feugiat placerat velit.
Quisque
## 13    Positive                               sapien. Cras dolor dolor,
tempus
## 14    Positive                urna suscipit nonummy. Fusce fermentum
fermentum
## 15    Positive                       vulputate, lacus. Cras interdum.
Nunc
## 16    Positive                                    in faucibus orci
luctus et
## 17    Positive                    odio sagittis semper. Nam tempor
diam
## 18    Positive              ornare placerat, orci lacus vestibulum lorem,
sit
## 19    Positive                 Aliquam rutrum lorem ac risus. Morbi
metus.
## 20    Positive                   ligula eu enim. Etiam imperdiet dictum
magna.
## 21    Positive              cursus. Nunc mauris elit, dictum eu, eleifend
nec,
## 22    Positive                   odio. Aliquam vulputate ullamcorper magna.
Sed
## 23    Positive              pede et risus. Quisque libero lacus, varius
et,
## 24    Positive                      feugiat. Sed nec metus facilisis
lorem
## 25    Positive                      vel arcu eu odio tristique
pharetra.
## 26    Positive              In scelerisque scelerisque dui.
Suspendisse ac
## 27    Positive                   sem elit, pharetra ut, pharetra
sed,
## 28    Positive                   non lorem vitae odio sagittis
semper.
## 29    Positive              Vestibulum ut eros non enim commodo
hendrerit.
## 30    Positive              suscipit nonummy. Fusce fermentum fermentum
arcu.
## 31    Positive          est tempor bibendum. Donec felis orci, adipiscing
non,
## 32    Positive                   dignissim lacus. Aliquam rutrum
lorem
## 33    Positive                   nostra, per inceptos hymenaeos.
Mauris
## 34    Positive        egestas blandit. Nam nulla magna, malesuada vel,
convallis
```

```
## 35     Positive          egestas blandit. Nam nulla magna, malesuada vel,
convallis
## 36     Positive                                    nec luctus felis
purus ac
## 37     Positive          enim nec tempus scelerisque, lorem ipsum sodales
purus,
## 38     Positive                              Duis sit amet diam eu dolor
egestas
## 39     Positive                              Duis sit amet diam eu dolor
egestas
## 40     Positive                              Curae; Phasellus ornare. Fusce
mollis.
## 41     Positive                          erat, eget tincidunt dui augue eu
tellus.
## 42     Positive                          erat, eget tincidunt dui augue eu
tellus.
## 43     Positive                      euismod ac, fermentum vel, mauris. Integer
sem
## 44     Positive                              sodales elit erat vitae risus.
Duis
## 45     Positive                          lacus, varius et, euismod et,
commodo
## 46     Positive          blandit congue. In scelerisque scelerisque dui.
Suspendisse
## 47     Positive                  tellus lorem eu metus. In lorem. Donec
elementum,
## 48     Positive                              Donec tincidunt. Donec vitae
erat
## 49     Positive                              Donec tincidunt. Donec vitae
erat
## 50     Positive                              sagittis augue, eu tempor erat
neque
## 51     Positive                          erat. Vivamus nisi. Mauris nulla.
Integer
## 52     Positive                  risus odio, auctor vitae, aliquet nec,
imperdiet
## 53     Positive cursus. Integer mollis. Integer tincidunt aliquam arcu.
Aliquam
## 54     Positive                              quis, pede. Praesent eu dui. Cum
sociis
## 55     Positive                              Mauris eu turpis. Nulla aliquet.
Proin
## 56     Positive          nec, malesuada ut, sem. Nulla interdum. Curabitur
dictum.
## 57     Positive                          Quisque nonummy ipsum non arcu. Vivamus
sit
## 58     Positive                      mauris, rhoncus id, mollis nec, cursus a,
enim.
## 59     Positive                          Cum sociis natoque penatibus et
magnis
```

```
## 60     Positive                                Proin mi. Aliquam gravida mauris ut
mi.
## 61     Positive                                  dapibus rutrum, justo. Praesent
luctus.
## 62     Positive                              malesuada vel, venenatis vel, faucibus
id,
## 63     Positive                          lacus. Cras interdum. Nunc sollicitudin
commodo
## 64     Positive              eget ipsum. Suspendisse sagittis. Nullam vitae diam.
Proin
## 65     Positive                               sapien. Aenean massa. Integer vitae
nibh.
## 66     Positive                                  vitae semper egestas, urna
justo
## 67     Positive                              facilisi. Sed neque. Sed eget lacus.
Mauris
## 68     Positive              Curabitur sed tortor. Integer aliquam adipiscing
lacus.
## 69     Positive                                ultricies adipiscing, enim mi
tempor
## 70     Positive                          condimentum. Donec at arcu. Vestibulum
ante
## 71     Positive                          condimentum. Donec at arcu. Vestibulum
ante
## 72     Positive              sapien imperdiet ornare. In faucibus. Morbi
vehicula.
## 73     Positive                                     orci sem eget massa.
Suspendisse
## 74     Positive                                  pulvinar arcu et pede. Nunc sed
orci
## 75     Positive                          sapien. Aenean massa. Integer vitae nibh.
Donec
## 76     Positive              Sed nec metus facilisis lorem tristique aliquet.
Phasellus
## 77     Positive                              magna. Praesent interdum ligula eu
enim.
## 78     Positive                          Maecenas iaculis aliquet diam. Sed diam
lorem,
## 79     Positive                          Maecenas iaculis aliquet diam. Sed diam
lorem,
## 80     Positive              tellus, imperdiet non, vestibulum nec, euismod in,
dolor.
## 81     Positive                          sed consequat auctor, nunc nulla vulputate dui,
nec
## 82     Positive                                  nulla. Cras eu tellus eu
augue
## 83     Positive                                  nulla. Cras eu tellus eu
augue
## 84     Positive                              enim. Nunc ut erat. Sed nunc est,
mollis
```

```
## 85      Positive                                    tempor diam dictum sapien. Aenean
massa.
## 86      Positive         eget laoreet posuere, enim nisl elementum purus,
accumsan
## 87      Positive             sem, consequat nec, mollis vitae, posuere at,
velit.
## 88      Positive             sem, consequat nec, mollis vitae, posuere at,
velit.
## 89      Positive                 vel, venenatis vel, faucibus id, libero.
Donec
## 90      Positive                 vel, venenatis vel, faucibus id, libero.
Donec
## 91      Positive                                         tortor at risus.
Nunc ac
## 92      Positive                      sociis natoque penatibus et magnis
dis
## 93      Positive            ut eros non enim commodo hendrerit. Donec
porttitor
## 94      Positive            ornare egestas ligula. Nullam feugiat placerat
velit.
## 95      Positive                            Fusce feugiat. Lorem ipsum dolor
sit
## 96      Positive                      amet, dapibus id, blandit at, nisi.
Cum
## 97      Positive                            ac tellus. Suspendisse sed
dolor.
## 98      Positive             Curabitur ut odio vel est tempor bibendum.
Donec
## 99      Positive     facilisis eget, ipsum. Donec sollicitudin adipiscing
ligula.
## 100     Positive                        sodales at, velit. Pellentesque
ultricies
## 101     Positive                      est. Mauris eu turpis. Nulla aliquet.
Proin
## 102     Positive             commodo tincidunt nibh. Phasellus nulla.
Integer
## 103     Positive         Mauris molestie pharetra nibh. Aliquam ornare,
libero
## 104     Positive         Mauris molestie pharetra nibh. Aliquam ornare,
libero
## 105     Positive             tincidunt tempus risus. Donec egestas. Duis ac
arcu.
## 106     Positive                                  Donec dignissim magna a
tortor.
## 107     Positive                            In lorem. Donec elementum,
lorem ut
## 108     Positive         consectetuer adipiscing elit. Aliquam auctor, velit
eget
## 109     Positive                            ultricies ligula. Nullam enim.
Sed
```

```
## 110    Positive                                    ultricies ligula. Nullam enim.
Sed
## 111    Positive              Cras eget nisi dictum augue malesuada malesuada.
Integer
## 112    Positive                              sociis natoque penatibus et
magnis
## 113    Positive                      vel turpis. Aliquam adipiscing lobortis
risus. In
## 114    Positive                  enim. Etiam imperdiet dictum magna. Ut tincidunt
orci
## 115    Positive                              scelerisque sed, sapien. Nunc
pulvinar
## 116    Positive                                   justo sit amet nulla. Donec
non
## 117    Positive                                   justo sit amet nulla. Donec
non
## 118    Positive                          Integer sem elit, pharetra ut, pharetra
sed,
## 119    Positive          sed orci lobortis augue scelerisque mollis. Phasellus
libero
## 120    Positive                              morbi tristique senectus et
netus
## 121    Positive                                   senectus et netus et
malesuada
## 122    Positive                      lectus pede, ultrices a, auctor non, feugiat
nec,
## 123    Positive            parturient montes, nascetur ridiculus mus. Proin vel
nisl.
## 124    Positive                  congue. In scelerisque scelerisque dui.
Suspendisse
## 125    Positive                      lorem, vehicula et, rutrum eu, ultrices sit
amet,
## 126    Positive                  cursus. Nunc mauris elit, dictum eu, eleifend
nec,
## 127    Positive                  cursus. Nunc mauris elit, dictum eu, eleifend
nec,
## 128    Positive                                   molestie arcu. Sed eu
nibh
## 129    Positive                              Nam tempor diam dictum
sapien.
## 130    Positive              mauris elit, dictum eu, eleifend nec, malesuada
ut,
## 131    Positive                              Donec luctus aliquet odio.
Etiam
## 132    Positive                              Donec luctus aliquet odio.
Etiam
## 133    Positive                                   mollis. Duis sit amet
diam
## 134    Positive                                   mollis. Duis sit amet
diam
```

```
## 135   Positive             non quam. Pellentesque habitant morbi tristique
senectus
## 136   Positive                             Cras eget nisi dictum augue
malesuada
## 137   Positive                             Cras eget nisi dictum augue
malesuada
## 138   Positive                  consectetuer euismod est arcu ac orci. Ut
semper
## 139   Positive                            posuere, enim nisl elementum
purus,
## 140   Positive                            posuere, enim nisl elementum
purus,
## 141   Positive            dignissim magna a tortor. Nunc commodo auctor
velit.
## 142   Positive               Aliquam erat volutpat. Nulla dignissim.
Maecenas
## 143   Positive          congue turpis. In condimentum. Donec at arcu.
Vestibulum
## 144   Positive          congue turpis. In condimentum. Donec at arcu.
Vestibulum
## 145   Positive                              massa. Suspendisse eleifend. Cras
sed
## 146   Positive                             arcu imperdiet ullamcorper.
Duis at
## 147   Positive                            eu, euismod ac, fermentum vel,
mauris.
## 148   Positive          fringilla mi lacinia mattis. Integer eu lacus.
Quisque
## 149   Positive          fringilla mi lacinia mattis. Integer eu lacus.
Quisque
## 150   Positive   cursus in, hendrerit consectetuer, cursus et, magna.
Praesent
## 151   Positive                              mi tempor lorem, eget mollis
lectus
## 152   Positive                            dapibus gravida. Aliquam tincidunt,
nunc
## 153   Positive                         nunc sed libero. Proin sed turpis nec
mauris
##      CheckingWorkerID ReportDate
## 1                1550 2021-02-10
## 2                1578 2020-05-07
## 3                1524 2021-04-23
## 4                1577 2021-02-10
## 5                1545 2021-01-03
## 6                1550 2021-02-09
## 7                1533 2020-12-18
## 8                1580 2021-04-06
## 9                1580 2021-04-06
## 10               1546 2021-05-07
## 11               1517 2020-08-24
```

```
## 12              1501 2020-08-13
## 13              1529 2021-07-03
## 14              1546 2021-05-13
## 15              1591 2020-06-04
## 16              1535 2021-06-06
## 17              1590 2021-06-29
## 18              1575 2020-09-13
## 19              1573 2020-09-20
## 20              1519 2021-04-12
## 21              1523 2020-04-06
## 22              1508 2020-06-04
## 23              1548 2021-03-15
## 24              1585 2020-12-26
## 25              1544 2020-08-27
## 26              1559 2020-07-06
## 27              1589 2020-08-23
## 28              1510 2020-07-13
## 29              1562 2020-12-13
## 30              1556 2021-06-23
## 31              1549 2021-04-13
## 32              1591 2021-07-24
## 33              1510 2020-10-12
## 34              1546 2021-04-15
## 35              1546 2021-04-15
## 36              1575 2020-11-10
## 37              1590 2021-06-14
## 38              1568 2021-01-23
## 39              1568 2021-01-23
## 40              1577 2021-01-13
## 41              1586 2020-07-08
## 42              1586 2020-07-08
## 43              1585 2021-07-04
## 44              1513 2021-02-24
## 45              1591 2021-07-19
## 46              1531 2021-05-18
## 47              1558 2021-03-04
## 48              1574 2020-12-28
## 49              1574 2020-12-28
## 50              1558 2020-10-17
## 51              1505 2020-05-04
## 52              1583 2020-07-02
## 53              1512 2021-02-20
## 54              1504 2021-06-01
## 55              1526 2020-11-10
## 56              1561 2021-05-16
## 57              1541 2021-04-03
## 58              1508 2021-02-21
## 59              1518 2020-04-26
## 60              1582 2021-04-07
## 61              1562 2021-03-20
```

```
## 62               1550 2021-05-14
## 63               1551 2020-09-24
## 64               1519 2020-05-08
## 65               1514 2021-02-22
## 66               1543 2021-01-15
## 67               1528 2020-09-14
## 68               1545 2021-05-04
## 69               1592 2020-11-15
## 70               1515 2020-11-11
## 71               1515 2020-11-11
## 72               1516 2020-07-22
## 73               1523 2020-06-11
## 74               1571 2021-06-03
## 75               1549 2020-05-12
## 76               1503 2020-05-18
## 77               1503 2021-06-03
## 78               1559 2020-11-24
## 79               1559 2020-11-24
## 80               1561 2021-06-10
## 81               1573 2021-04-12
## 82               1508 2020-07-29
## 83               1508 2020-07-29
## 84               1568 2020-10-14
## 85               1560 2021-05-10
## 86               1537 2021-06-18
## 87               1563 2021-06-24
## 88               1563 2021-06-24
## 89               1526 2020-12-20
## 90               1526 2020-12-20
## 91               1501 2021-02-01
## 92               1553 2021-04-23
## 93               1598 2020-10-18
## 94               1600 2020-06-12
## 95               1548 2021-04-07
## 96               1597 2021-04-20
## 97               1583 2021-06-11
## 98               1564 2020-12-03
## 99               1544 2021-05-04
## 100              1576 2021-06-25
## 101              1587 2021-02-28
## 102              1523 2021-05-17
## 103              1522 2021-06-30
## 104              1522 2021-06-30
## 105              1516 2021-03-12
## 106              1581 2021-01-10
## 107              1504 2021-06-17
## 108              1542 2021-01-22
## 109              1535 2021-01-28
## 110              1535 2021-01-28
## 111              1535 2020-06-29
```

```
## 112            1534 2021-02-15
## 113            1559 2021-05-12
## 114            1562 2020-04-19
## 115            1549 2021-03-30
## 116            1526 2021-05-30
## 117            1526 2021-05-30
## 118            1561 2021-06-09
## 119            1566 2021-03-24
## 120            1569 2020-10-05
## 121            1567 2021-06-20
## 122            1525 2020-07-25
## 123            1576 2020-07-21
## 124            1507 2021-06-02
## 125            1505 2021-05-28
## 126            1565 2020-06-28
## 127            1565 2020-06-28
## 128            1532 2021-03-16
## 129            1541 2021-07-22
## 130            1547 2021-07-05
## 131            1594 2021-05-22
## 132            1594 2021-05-22
## 133            1547 2021-06-20
## 134            1547 2021-06-20
## 135            1563 2020-04-08
## 136            1591 2020-04-28
## 137            1591 2020-04-28
## 138            1571 2020-07-10
## 139            1588 2021-07-22
## 140            1588 2021-07-22
## 141            1531 2020-12-27
## 142            1588 2020-08-31
## 143            1501 2020-11-28
## 144            1501 2020-11-28
## 145            1501 2020-10-13
## 146            1561 2021-01-31
## 147            1567 2021-04-12
## 148            1504 2021-03-23
## 149            1504 2021-03-23
## 150            1589 2021-03-26
## 151            1510 2020-06-10
## 152            1534 2020-08-17
## 153            1531 2021-02-05
```

QUERY *2 - A Subquery to count total number of possible cases of direct person to person transmission in Massachusetts state.

SQL: SELECT count(*) as "Total probable cases of Direct Transmission via person to person interactions in Massachusetts" FROM (SELECT i.InteractingUserID FROM Interactions i

INNER JOIN UserEvents on i.InteractionID=UserEvents.EventID INNER JOIN HealthReportCheck r1 on i.InteractingUserID=r1.UserID INNER JOIN HealthReportCheck r2 on i.VisitorID=r2.UserID INNER JOIN Place on i.InteractionPlaceID=place.placeid WHERE r1.TestResult='POSITIVE' and r2.TestResult in ('NEGATIVE','UNCLEAR') AND r1.ReportDate<r2.ReportDate AND Place.State in ('MA')) as derived;

1 row(s) returned

RESULT SCREENSHOTS:

Total probable cases of Direct Transmission via person to person interactions in Massachusetts
58

R-Notebook Execution

```
val2 <- dbFetch(dbSendQuery(conn,"SELECT count(*) as
TotalProbableCasesViaPersonToPersonMassachusetts
FROM
 (SELECT i.InteractingUserID FROM Interactions i
INNER JOIN UserEvents on i.InteractionID=UserEvents.EventID
INNER JOIN HealthReportCheck r1 on i.InteractingUserID=r1.UserID
INNER JOIN HealthReportCheck r2 on i.VisitorID=r2.UserID
INNER JOIN Place on  i.InteractionPlaceID=place.placeid
WHERE r1.TestResult='POSITIVE' and r2.TestResult in ('NEGATIVE','UNCLEAR')
AND r1.ReportDate<r2.ReportDate
AND Place.State in ('MA')
) as derived;" ))

val2

##    TotalProbableCasesViaPersonToPersonMassachusetts
## 1                                               58
```

QUERY 3 - A QUERY with a HAVING CLAUSE to return the details of visits made by people who tested positive, within 20 days(before and after) of getting the test reports. Where the visit lasted longer than 4 hours.

SQL:

 SELECT a.UserID, p.firstName, s.PhoneNo, u.EventStartTime as "Time of Visit",TIMEDIFF(u.EventEndTime,u.EventStartTime)as DurationOfVisit, m.placename,m.streetarea, m.city, m.longitude, m.latitude FROM visit v INNER JOIN AppUser a on v.VisitingUserID=a.UserID INNER JOIN Person p on a.userid=p.PersonID

INNER JOIN PersonPhone s on p.PersonID=s.PersonID INNER JOIN Place m on v.VisitPlaceID=m.placeid INNER JOIN UserEvents u on v.VisitID=u.EventID INNER JOIN HealthReportCheck h on a.UserID=h.UserID WHERE h.TestResult='POSITIVE' AND datediff(h.ReportDate, u.EventStartTime)<20 AND datediff(h.ReportDate, u.EventStartTime)>-20 HAVING DurationOfVisit>'04:00:00' ORDER by DurationOfVisit

9 row(s) returned

RESULT SCREENSHOTS:

UserID	firstName	PhoneNo	Time of Visit	DurationOfVi...	placename	streetarea	city	longitude	latitude
1260	Aileen	(490) 564-4413	2020-07-11 20:13:24	04:50:49	Sawayn Knoll	PLAINS FIELD DRIVE	DARTMOUTH	-70.95760590	41.54670870
1271	Aquila	(347) 164-3418	2020-07-19 11:29:43	15:40:44	Kyra Plaza	MEADOW SHORES ROAD	DARTMOUTH	-70.94757720	41.53699490
1336	Isadora	(657) 930-9922	2020-07-14 03:18:15	18:50:07	Kuhic Brooks	MEADOW SHORES ROAD	DARTMOUTH	-70.94763740	41.53670050
1276	Patrick	(234) 147-8947	2020-07-03 22:31:00	19:24:46	Kuhic Brooks	MEADOW SHORES ROAD	DARTMOUTH	-70.94763740	41.53670050
1276	Patrick	(571) 689-5951	2020-07-03 22:31:00	19:24:46	Kuhic Brooks	MEADOW SHORES ROAD	DARTMOUTH	-70.94763740	41.53670050
1398	Simon	(187) 845-7356	2020-07-11 11:50:19	20:11:41	Wisoky Turnpike	WAMSUTTA STREET	DARTMOUTH	-70.93867720	41.55821490
1276	Patrick	(234) 147-8947	2020-07-18 06:00:38	20:35:01	Kyra Plaza	MEADOW SHORES ROAD	DARTMOUTH	-70.94757720	41.53699490
1276	Patrick	(571) 689-5951	2020-07-18 06:00:38	20:35:01	Kyra Plaza	MEADOW SHORES ROAD	DARTMOUTH	-70.94757720	41.53699490
1271	Aquila	(347) 164-3418	2020-07-09 13:13:58	23:16:16	Satterfield Flats	PENNIKESE LANE	DARTMOUTH	-70.93912920	41.55689690

R-Notebook Execution

```
val3 <- dbFetch(dbSendQuery(conn,"SELECT a.UserID, p.firstName, s.PhoneNo,
u.EventStartTime as TimeOFVisit,TIMEDIFF(u.EventEndTime,u.EventStartTime)as
DurationOfVisit, m.placename,m.streetarea, m.city, m.longitude, m.latitude
FROM visit v
INNER JOIN AppUser a on v.VisitingUserID=a.UserID
INNER JOIN Person p on a.userid=p.PersonID
INNER JOIN PersonPhone s on p.PersonID=s.PersonID
INNER JOIN Place m on v.VisitPlaceID=m.placeid
INNER JOIN UserEvents u on v.VisitID=u.EventID
INNER JOIN HealthReportCheck h on a.UserID=h.UserID
WHERE h.TestResult='POSITIVE'
AND datediff(h.ReportDate, u.EventStartTime)<20
AND datediff(h.ReportDate, u.EventStartTime)>-20
HAVING DurationOfVisit>'04:00:00'
ORDER by DurationOfVisit"))

## Warning in .local(conn, statement, ...): Decimal MySQL column 8 imported
as
## numeric

## Warning in .local(conn, statement, ...): Decimal MySQL column 9 imported
as
## numeric

val3

##    UserID firstName          PhoneNo          TimeOFVisit DurationOfVisit
## 1    1260    Aileen (490) 564-4413 2020-07-11 20:13:24        04:50:49
## 2    1271    Aquila (347) 164-3418 2020-07-19 11:29:43        15:40:44
## 3    1336   Isadora (657) 930-9922 2020-07-14 03:18:15        18:50:07
## 4    1276   Patrick (234) 147-8947 2020-07-03 22:31:00        19:24:46
```

```
## 5    1276    Patrick (571) 689-5951 2020-07-03 22:31:00         19:24:46
## 6    1398      Simon (187) 845-7356 2020-07-11 11:50:19         20:11:41
## 7    1276    Patrick (234) 147-8947 2020-07-18 06:00:38         20:35:01
## 8    1276    Patrick (571) 689-5951 2020-07-18 06:00:38         20:35:01
## 9    1271     Aquila (347) 164-3418 2020-07-09 13:13:58         23:16:16
##           placename         streetarea      city longitude latitude
## 1     Sawayn Knoll PLAINS FIELD DRIVE DARTMOUTH -70.95761 41.54671
## 2       Kyra Plaza MEADOW SHORES ROAD DARTMOUTH -70.94758 41.53699
## 3      Kuhic Brooks MEADOW SHORES ROAD DARTMOUTH -70.94764 41.53670
## 4      Kuhic Brooks MEADOW SHORES ROAD DARTMOUTH -70.94764 41.53670
## 5      Kuhic Brooks MEADOW SHORES ROAD DARTMOUTH -70.94764 41.53670
## 6  Wisoky Turnpike    WAMSUTTA STREET DARTMOUTH -70.93868 41.55821
## 7       Kyra Plaza MEADOW SHORES ROAD DARTMOUTH -70.94758 41.53699
## 8       Kyra Plaza MEADOW SHORES ROAD DARTMOUTH -70.94758 41.53699
## 9 Satterfield Flats    PENNIKESE LANE DARTMOUTH -70.93913 41.55690
```

QUERY 4 - A COMPLEX QUERY - A depth-2 search query to find out all interactions of persons, who came out positive/unclear in the covid-19 test, after their interacting with some person in the past.

Example Case:

• John Doe meets Sabrina Chan, and Jian Yang.
• John Doe was found positive, so Sabrina Chan and Jian Yang take covid tests.
• Jian tests positive, while Sabrina tests negative, so we need to trace Jian's interactions now.

SQL: select o.FirstName as "Guy1 who found out he got exposed", p.FirstName as "Guy2 who had met guy1", s.PhoneNo as "Phone number of Guy2", u.eventstarttime as "Interaction Start Details" , u.eventendtime as "Interaction End Details" from interactions a, person p, personphone s,userevents u, person o WHERE a.InteractionID=u.eventid AND p.personid = a.visitorid AND s.PersonID=p.PersonId AND a.Interactinguserid=o.personid

AND a.interactinguserid IN (SELECT i.VisitorID FROM Interactions i INNER JOIN UserEvents on i.InteractionID=UserEvents.EventID INNER JOIN HealthReportCheck r1 on i.InteractingUserID=r1.UserID INNER JOIN HealthReportCheck r2 on i.VisitorID=r2.UserID WHERE r1.TestResult='POSITIVE' and r2.TestResult in ('UNCLEAR','POSITIVE') AND r1.ReportDate< r2.ReportDate)

AND a.Interactinguserid NOT IN (SELECT i.interactinguserid FROM Interactions i INNER JOIN UserEvents on i.InteractionID=UserEvents.EventID INNER JOIN HealthReportCheck r1 on i.InteractingUserID=r1.UserID INNER JOIN HealthReportCheck r2 on i.VisitorID=r2.UserID WHERE r1.TestResult='POSITIVE' and r2.TestResult in ('UNCLEAR','POSITIVE') AND r1.ReportDate< r2.ReportDate)

37 row(s) returned

RESULT SCREENSHOTS

Guy1 who found out he got exposed	Guy2 who had met guy1	Phone number of Guy2	Interaction Start Details	Interaction End Details
Hyatt	Meredith	(879) 909-7095	2020-09-19 09:49:27	2020-09-19 16:56:19
Blake	Deacon	(577) 819-8645	2020-12-02 16:46:01	2020-12-02 18:32:43
Blake	Deacon	(577) 819-8645	2020-06-14 15:03:22	2020-06-15 13:43:53
Blake	Deacon	(577) 819-8645	2020-07-24 21:34:46	2020-07-24 23:40:24
Isabella	Nissim	(299) 210-1873	2020-07-01 09:49:14	2020-07-02 06:04:40
Jonah	Harrison	(855) 502-7133	2020-11-06 21:28:28	2020-11-07 03:22:17
Harding	Raphael	(329) 783-9231	2020-07-05 10:26:13	2020-07-05 17:27:59
Harding	Raphael	(556) 414-9216	2020-07-05 10:26:13	2020-07-05 17:27:59
Harding	Raphael	(718) 485-5570	2020-07-05 10:26:13	2020-07-05 17:27:59
Harding	Raphael	(329) 783-9231	2020-11-05 17:44:23	2020-11-06 16:42:42
Harding	Raphael	(556) 414-9216	2020-11-05 17:44:23	2020-11-06 16:42:42
Harding	Raphael	(718) 485-5570	2020-11-05 17:44:23	2020-11-06 16:42:42
Nissim	Eliana	(601) 906-0421	2020-02-20 13:30:40	2020-02-21 05:47:24
Nissim	Eliana	(624) 566-4597	2020-02-20 13:30:40	2020-02-21 05:47:24
Regan	Iris	(371) 322-2736	2020-02-22 05:18:29	2020-02-22 15:42:22
Regan	Iris	(407) 669-0388	2020-02-22 05:18:29	2020-02-22 15:42:22
Regan	Iris	(441) 434-8855	2020-02-22 05:18:29	2020-02-22 15:42:22
Jillian	Lucas	(459) 337-1561	2020-12-26 15:40:00	2020-12-27 05:10:50
Jillian	Lucas	(526) 380-9378	2020-12-26 15:40:00	2020-12-27 05:10:50
Jillian	Mia	(111) 440-6493	2020-06-05 23:56:21	2020-06-06 00:44:52

Result 64

Results

Note: We don't use the distinct keyword because we want to find out all interactions, even if there were more than one!

We can go till depth 5 with MySQL in a medium sized database, after depth-5 mysqld crashes within 30 minutes of wait.

R-Notebook Execution

```
val4 <- dbFetch(dbSendQuery(conn,"select o.FirstName as
Guy1_who_found_out_he_got_exposed, p.FirstName as Guy2_who_had_met_guy1,
s.PhoneNo as Phone_number_of_Guy2, u.eventstarttime as
Interaction_Start_Details , u.eventendtime as Interaction_End_Details from
interactions a, person p, personphone s,userevents u, person o
WHERE a.InteractionID=u.eventid
AND p.personid = a.visitorid
AND s.PersonID=p.PersonId
AND a.Interactinguserid=o.personid

AND a.interactinguserid IN (
SELECT  i.VisitorID FROM Interactions i
INNER JOIN UserEvents on i.InteractionID=UserEvents.EventID
INNER JOIN HealthReportCheck r1 on i.InteractingUserID=r1.UserID
INNER JOIN HealthReportCheck r2 on i.VisitorID=r2.UserID
WHERE r1.TestResult='POSITIVE' and r2.TestResult in ('UNCLEAR','POSITIVE')
AND  r1.ReportDate< r2.ReportDate
)

AND a.Interactinguserid NOT IN (
SELECT  i.interactinguserid FROM Interactions i
INNER JOIN UserEvents on i.InteractionID=UserEvents.EventID
INNER JOIN HealthReportCheck r1 on i.InteractingUserID=r1.UserID
INNER JOIN HealthReportCheck r2 on i.VisitorID=r2.UserID
WHERE r1.TestResult='POSITIVE' and r2.TestResult in ('UNCLEAR','POSITIVE')
```

```
AND  r1.ReportDate< r2.ReportDate
)   "))
```

val4

```
##     Guy1_who_found_out_he_got_exposed Guy2_who_had_met_guy1
Phone_number_of_Guy2
## 1                              Hyatt              Meredith         (879)
909-7095
## 2                              Blake               Deacon          (577)
819-8645
## 3                              Blake               Deacon          (577)
819-8645
## 4                              Blake               Deacon          (577)
819-8645
## 5                           Isabella               Nissim          (299)
210-1873
## 6                              Jonah             Harrison          (855)
502-7133
## 7                            Harding              Raphael          (329)
783-9231
## 8                            Harding              Raphael          (556)
414-9216
## 9                            Harding              Raphael          (718)
485-5570
## 10                           Harding              Raphael          (329)
783-9231
## 11                           Harding              Raphael          (556)
414-9216
## 12                           Harding              Raphael          (718)
485-5570
## 13                            Nissim               Eliana          (601)
906-0421
## 14                            Nissim               Eliana          (624)
566-4597
## 15                             Regan                 Iris          (371)
322-2736
## 16                             Regan                 Iris          (407)
669-0388
## 17                             Regan                 Iris          (441)
434-8855
## 18                           Jillian                Lucas          (459)
337-1561
## 19                           Jillian                Lucas          (526)
380-9378
## 20                           Jillian                  Mia          (111)
440-6493
## 21                           Jillian                  Mia          (411)
680-7101
## 22                           Jillian                  Mia          (638)
```

```
297-5657
## 23                            Ulysses          Courtney      (475)
783-9150
## 24                             Xerxes           Leilani      (259)
483-8832
## 25                            Shafira            Katell      (363)
101-8143
## 26                            Shafira            Katell      (797)
450-6084
## 27                            Shafira            Katell      (363)
101-8143
## 28                            Shafira            Katell      (797)
450-6084
## 29                            Shafira         Fredericka     (245)
631-6854
## 30                            Shafira            Katell      (363)
101-8143
## 31                            Shafira            Katell      (797)
450-6084
## 32                               Iris             Blake      (925)
907-6582
## 33                              Dacey          Alexandra     (181)
501-5690
## 34                              Dacey          Alexandra     (181)
501-5690
## 35                                Zoe             Colby      (329)
852-7871
## 36                             Tashya             Wayne      (641)
587-1772
## 37                             Tashya             Wayne      (641)
587-1772
##     Interaction_Start_Details Interaction_End_Details
## 1         2020-09-19 09:49:27     2020-09-19 16:56:19
## 2         2020-12-02 16:46:01     2020-12-02 18:32:43
## 3         2020-06-14 15:03:22     2020-06-15 13:43:53
## 4         2020-07-24 21:34:46     2020-07-24 23:40:24
## 5         2020-07-01 09:49:14     2020-07-02 06:04:40
## 6         2020-11-06 21:28:28     2020-11-07 03:22:17
## 7         2020-07-05 10:26:13     2020-07-05 17:27:59
## 8         2020-07-05 10:26:13     2020-07-05 17:27:59
## 9         2020-07-05 10:26:13     2020-07-05 17:27:59
## 10        2020-11-05 17:44:23     2020-11-06 16:42:42
## 11        2020-11-05 17:44:23     2020-11-06 16:42:42
## 12        2020-11-05 17:44:23     2020-11-06 16:42:42
## 13        2020-02-20 13:30:40     2020-02-21 05:47:24
## 14        2020-02-20 13:30:40     2020-02-21 05:47:24
## 15        2020-02-22 05:18:29     2020-02-22 15:42:22
## 16        2020-02-22 05:18:29     2020-02-22 15:42:22
## 17        2020-02-22 05:18:29     2020-02-22 15:42:22
## 18        2020-12-26 15:40:00     2020-12-27 05:10:50
```

```
## 19        2020-12-26 15:40:00      2020-12-27 05:10:50
## 20        2020-06-05 23:56:21      2020-06-06 00:44:52
## 21        2020-06-05 23:56:21      2020-06-06 00:44:52
## 22        2020-06-05 23:56:21      2020-06-06 00:44:52
## 23        2020-11-24 03:20:33      2020-11-24 10:32:17
## 24        2020-03-16 05:26:22      2020-03-16 12:53:25
## 25        2020-11-23 11:26:12      2020-11-23 19:12:51
## 26        2020-11-23 11:26:12      2020-11-23 19:12:51
## 27        2020-08-29 13:37:45      2020-08-29 15:40:25
## 28        2020-08-29 13:37:45      2020-08-29 15:40:25
## 29        2020-04-09 08:14:49      2020-04-10 00:27:31
## 30        2020-01-05 13:53:23      2020-01-06 00:40:26
## 31        2020-01-05 13:53:23      2020-01-06 00:40:26
## 32        2020-04-04 15:16:41      2020-04-04 23:30:01
## 33        2020-02-16 04:35:03      2020-02-16 20:04:04
## 34        2020-09-21 12:39:58      2020-09-22 02:20:06
## 35        2020-08-18 23:13:41      2020-08-19 03:14:37
## 36        2020-01-31 23:21:49      2020-02-01 07:47:41
## 37        2020-03-01 22:01:35      2020-03-02 17:01:29
```

QUERY 5 - A Query of Choice

Details of interactions of persons who tested COVID positive(Depth 1 -> Guy 0 meets Guy 1)

SQL:

 SELECT i.interactingUserId as UniqueID, guy1.firstName as "Meeting Person 1",
r1.TestResult as "First Guy's Covid Report" ,i.VisitorID as UniqueID,guy2.firstName as
"Meeting Person 2", r2.TestResult as "Second Guy's Covid Report",
UserEvents.EventStartTime as "DateTime of Meeting", UserEvents.Description as "Details
of Meeting" FROM Interactions i INNER JOIN UserEvents on
i.InteractionID=UserEvents.EventID INNER JOIN Person guy1 on
i.InteractingUserID=guy1.PersonID INNER JOIN Person guy2 on i.VisitorID=guy2.PersonID
INNER JOIN HealthReportCheck r1 on i.InteractingUserID=r1.UserID INNER JOIN
HealthReportCheck r2 on i.VisitorID=r2.UserID WHERE r1.TestResult='POSITIVE' 228
row(s) returned

RESULTS SCREENSHOTS:

UniqueID	Meeting Person 1	First Guy's Covid Report	UniqueID	Meeting Person 2	Second Guy's Covid Rep...	DateTime of Meeti...	Details of Meeting
1001	Yetta	Positive	1002	Florence	Unclear	2020-02-14 00:36:23	mi. Duis risus odio, auctor vitae, aliquet
1001	Yetta	Positive	1002	Florence	Unclear	2020-04-06 20:06:35	quam vel sapien imperdiet ornare. In faucibus.
1005	Abbot	Positive	1006	Abbot	Negative	2020-11-01 17:06:41	Mauris ut quam vel sapien imperdiet ornare.
1005	Abbot	Positive	1006	Abbot	Negative	2020-01-04 18:26:57	iaculis nec, eleifend
1005	Abbot	Positive	1006	Abbot	Negative	2020-04-20 02:11:17	lectus ante dictum mi, ac mattis
1007	Samuel	Positive	1008	Kyra	Positive	2020-05-07 20:01:34	et ultrices posuere cubilia Curae;
1010	Petra	Positive	1011	Robin	Positive	2020-03-16 14:35:58	enim, condimentum eget, volutpat
1011	Robin	Positive	1012	Malcolm	Positive	2020-02-27 16:54:27	pede. Suspendisse dui. Fusce
1020	Tasha	Positive	1021	Lucian	Positive	2020-04-06 12:07:44	sem elit, pharetra ut, pharetra sed,
1021	Lucian	Positive	1022	Kevin	Positive	2020-09-23 07:33:02	est ac mattis semper, dui lectus rutrum urna,
1021	Lucian	Positive	1022	Kevin	Positive	2020-04-15 09:32:10	Praesent eu dui.
1027	Plato	Positive	1028	Aurora	Unclear	2020-05-24 18:38:17	id risus quis diam luctus lobortis. Class
1029	Brendan	Positive	1030	Kirk	Negative	2020-05-23 06:12:18	massa. Integer vitae
1029	Brendan	Positive	1030	Kirk	Negative	2020-12-23 23:52:40	nec, mollis vitae, posuere
1033	Roanna	Positive	1034	Gray	Unclear	2020-11-18 19:24:50	Sed molestie. Sed id risus quis
1033	Roanna	Positive	1034	Gray	Unclear	2020-03-11 07:22:00	et malesuada fames ac
1035	Kathleen	Positive	1036	Echo	Negative	2020-04-04 19:37:43	enim nisl elementum
1035	Kathleen	Positive	1036	Echo	Negative	2020-11-20 12:40:14	vel turpis. Aliquam adipiscing lobortis

Result 71

Results

R-Notebook Execution

```
val5 <- dbFetch(dbSendQuery(conn,"SELECT i.interactingUserId as UniqueID,
guy1.firstName as Meeting_Person_1, r1.TestResult as First_Guys_Covid_Report,
i.VisitorID as UniqueID, guy2.firstName as Meeting_Person_2,
r2.TestResult as Second_Guys_CovidReport,
UserEvents.EventStartTime as DateTime_of_Meeting, UserEvents.Description as
Details_of_Meeting
 FROM Interactions i
INNER JOIN UserEvents on i.InteractionID=UserEvents.EventID
INNER JOIN Person guy1 on i.InteractingUserID=guy1.PersonID
INNER JOIN Person guy2 on i.VisitorID=guy2.PersonID
INNER JOIN HealthReportCheck r1 on i.InteractingUserID=r1.UserID
INNER JOIN HealthReportCheck r2 on i.VisitorID=r2.UserID
WHERE r1.TestResult='POSITIVE'"))

val5

##      UniqueID Meeting_Person_1 First_Guys_Covid_Report UniqueID
Meeting_Person_2
## 1        1001            Yetta                Positive     1002
Florence
## 2        1001            Yetta                Positive     1002
Florence
## 3        1005            Abbot                Positive     1006
Abbot
## 4        1005            Abbot                Positive     1006
Abbot
## 5        1005            Abbot                Positive     1006
Abbot
## 6        1007           Samuel                Positive     1008
Kyra
## 7        1010            Petra                Positive     1011
Robin
## 8        1011            Robin                Positive     1012
Malcolm
## 9        1020            Tasha                Positive     1021
Lucian
```

```
## 10       1021          Lucian          Positive       1022
Kevin
## 11       1021          Lucian          Positive       1022
Kevin
## 12       1027           Plato          Positive       1028
Aurora
## 13       1029         Brendan          Positive       1030
Kirk
## 14       1029         Brendan          Positive       1030
Kirk
## 15       1033          Roanna          Positive       1034
Gray
## 16       1033          Roanna          Positive       1034
Gray
## 17       1035        Kathleen          Positive       1036
Echo
## 18       1035        Kathleen          Positive       1036
Echo
## 19       1037          Hollee          Positive       1038
Hope
## 20       1037          Hollee          Positive       1038
Hope
## 21       1043           Baker          Positive       1044
Carson
## 22       1057           Blaze          Positive       1058
Igor
## 23       1057           Blaze          Positive       1058
Igor
## 24       1234          Alexis          Positive       1235
Octavius
## 25       1260          Aileen          Positive       1261
Damian
## 26       1260          Aileen          Positive       1261
Damian
## 27       1276         Patrick          Positive       1277
Hyatt
## 28       1276         Patrick          Positive       1277
Hyatt
## 29       1255         Desiree          Positive       1256
Eagan
## 30       1255         Desiree          Positive       1256
Eagan
## 31       1255         Desiree          Positive       1256
Eagan
## 32       1255         Desiree          Positive       1256
Eagan
## 33       1260          Aileen          Positive       1261
Damian
## 34       1260          Aileen          Positive       1261
Damian
```

```
## 35    1261        Damian              Positive      1262
Giacomo
## 36    1261        Damian              Positive      1262
Giacomo
## 37    1261        Damian              Positive      1262
Giacomo
## 38    1261        Damian              Positive      1262
Giacomo
## 39    1264         Alisa              Positive      1265
Michael
## 40    1264         Alisa              Positive      1265
Michael
## 41    1270         Naomi              Positive      1271
Aquila
## 42    1270         Naomi              Positive      1271
Aquila
## 43    1270         Naomi              Positive      1271
Aquila
## 44    1270         Naomi              Positive      1271
Aquila
## 45    1273         Adara              Positive      1274
Malik
## 46    1273         Adara              Positive      1274
Malik
## 47    1273         Adara              Positive      1274
Malik
## 48    1273         Adara              Positive      1274
Malik
## 49    1277         Hyatt              Positive      1278
Meredith
## 50    1277         Hyatt              Positive      1278
Meredith
## 51    1289         Wendy              Positive      1290
Xander
## 52    1289         Wendy              Positive      1290
Xander
## 53    1291         Magee              Positive      1292
Chaney
## 54    1291         Magee              Positive      1292
Chaney
## 55    1295          Inez              Positive      1296
Charity
## 56    1295          Inez              Positive      1296
Charity
## 57    1300        Maxine              Positive      1301
Candace
## 58    1300        Maxine              Positive      1301
Candace
## 59    1306        Daniel              Positive      1307
Lesley
```

```
## 60            1310            Dai            Positive        1311
Malachi
## 61            1315            Nayda          Positive        1316
Seth
## 62            1315            Nayda          Positive        1316
Seth
## 63            1315            Nayda          Positive        1316
Seth
## 64            1318            Haviva         Positive        1319
Myra
## 65            1320            Cara           Positive        1321
Blake
## 66            1321            Blake          Positive        1322
Deacon
## 67            1321            Blake          Positive        1322
Deacon
## 68            1321            Blake          Positive        1322
Deacon
## 69            1329            Wanda          Positive        1330
Debra
## 70            1329            Wanda          Positive        1330
Debra
## 71            1330            Debra          Positive        1331
Alice
## 72            1330            Debra          Positive        1331
Alice
## 73            1335            Samuel         Positive        1336
Isadora
## 74            1335            Samuel         Positive        1336
Isadora
## 75            1336            Isadora        Positive        1337
Lareina
## 76            1337            Lareina        Positive        1338
Linus
## 77            1337            Lareina        Positive        1338
Linus
## 78            1339            Bryar          Positive        1340
Isabella
## 79            1339            Bryar          Positive        1340
Isabella
## 80            1348            Vielka         Positive        1349
Colette
## 81            1354            Griffith       Positive        1355
Christopher
## 82            1387            Yetta          Positive        1388
Igor
## 83            1387            Yetta          Positive        1388
Igor
## 84            1396            Judith         Positive        1397
Kato
```

```
## 85    1399        Alexis           Positive      1400
Belle
## 86    1399        Alexis           Positive      1400
Belle
## 87    1399        Alexis           Positive      1400
Belle
## 88    1399        Alexis           Positive      1400
Belle
## 89    1400         Belle           Positive      1401
Jonah
## 90    1400         Belle           Positive      1401
Jonah
## 91    1400         Belle           Positive      1401
Jonah
## 92    1400         Belle           Positive      1401
Jonah
## 93    1401         Jonah           Positive      1402
Harrison
## 94    1401         Jonah           Positive      1402
Harrison
## 95    1404        Ulysses          Positive      1405
Courtney
## 96    1404        Ulysses          Positive      1405
Courtney
## 97    1406         Nash            Positive      1407
Katelyn
## 98    1406         Nash            Positive      1407
Katelyn
## 99    1414        Jocelyn          Positive      1415
Daquan
## 100   1414        Jocelyn          Positive      1415
Daquan
## 101   1414        Jocelyn          Positive      1415
Daquan
## 102   1414        Jocelyn          Positive      1415
Daquan
## 103   1417         Kellie          Positive      1418
Kiayada
## 104   1417         Kellie          Positive      1418
Kiayada
## 105   1417         Kellie          Positive      1418
Kiayada
## 106   1417         Kellie          Positive      1418
Kiayada
## 107   1428         Jesse           Positive      1429
Harding
## 108   1428         Jesse           Positive      1429
Harding
## 109   1430        Raphael          Positive      1431
Nissim
```

```
## 110      1430          Raphael             Positive        1431
Nissim
## 111      1430          Raphael             Positive        1431
Nissim
## 112      1430          Raphael             Positive        1431
Nissim
## 113      1432          Eliana              Positive        1433
Cathleen
## 114      1432          Eliana              Positive        1433
Cathleen
## 115      1432          Eliana              Positive        1433
Cathleen
## 116      1432          Eliana              Positive        1433
Cathleen
## 117      1433          Cathleen            Positive        1434
Evangeline
## 118      1433          Cathleen            Positive        1434
Evangeline
## 119      1434          Evangeline          Positive        1435
Shafira
## 120      1434          Evangeline          Positive        1435
Shafira
## 121      1435          Shafira             Positive        1436
Katell
## 122      1435          Shafira             Positive        1436
Katell
## 123      1435          Shafira             Positive        1436
Katell
## 124      1435          Shafira             Positive        1436
Katell
## 125      1435          Shafira             Positive        1436
Katell
## 126      1435          Shafira             Positive        1436
Katell
## 127      1439          Jonas               Positive        1440
Brenna
## 128      1439          Jonas               Positive        1440
Brenna
## 129      1441          Lacota              Positive        1442
Raymond
## 130      1441          Lacota              Positive        1442
Raymond
## 131      1441          Lacota              Positive        1442
Raymond
## 132      1441          Lacota              Positive        1442
Raymond
## 133      1443          Adrienne            Positive        1444
Odysseus
## 134      1443          Adrienne            Positive        1444
Odysseus
```

```
## 135   1445        Cailin              Positive    1446
Regan
## 136   1445        Cailin              Positive    1446
Regan
## 137   1445        Cailin              Positive    1446
Regan
## 138   1445        Cailin              Positive    1446
Regan
## 139   1446        Regan               Positive    1447
Iris
## 140   1446        Regan               Positive    1447
Iris
## 141   1447         Iris               Positive    1448
Jillian
## 142   1447         Iris               Positive    1448
Jillian
## 143   1447         Iris               Positive    1448
Jillian
## 144   1447         Iris               Positive    1448
Jillian
## 145   1400        Belle               Positive    1401
Jonah
## 146   1400        Belle               Positive    1401
Jonah
## 147   1400        Belle               Positive    1401
Jonah
## 148   1400        Belle               Positive    1401
Jonah
## 149   1401        Jonah               Positive    1402
Harrison
## 150   1401        Jonah               Positive    1402
Harrison
## 151   1402        Harrison            Positive    1403
Teegan
## 152   1402        Harrison            Positive    1403
Teegan
## 153   1402        Harrison            Positive    1403
Teegan
## 154   1402        Harrison            Positive    1403
Teegan
## 155   1403        Teegan              Positive    1404
Ulysses
## 156   1403        Teegan              Positive    1404
Ulysses
## 157   1408         Dana               Positive    1409
Lael
## 158   1408         Dana               Positive    1409
Lael
## 159   1408         Dana               Positive    1409
Lael
```

## 160	1408	Dana	Positive	1409
Lael				
## 161	1411	Ross	Positive	1412
Scott				
## 162	1411	Ross	Positive	1412
Scott				
## 163	1411	Ross	Positive	1412
Scott				
## 164	1411	Ross	Positive	1412
Scott				
## 165	1414	Jocelyn	Positive	1415
Daquan				
## 166	1414	Jocelyn	Positive	1415
Daquan				
## 167	1414	Jocelyn	Positive	1415
Daquan				
## 168	1414	Jocelyn	Positive	1415
Daquan				
## 169	1415	Daquan	Positive	1416
Hedy				
## 170	1415	Daquan	Positive	1416
Hedy				
## 171	1415	Daquan	Positive	1416
Hedy				
## 172	1415	Daquan	Positive	1416
Hedy				
## 173	1423	Charissa	Positive	1424
Xerxes				
## 174	1423	Charissa	Positive	1424
Xerxes				
## 175	1423	Charissa	Positive	1424
Xerxes				
## 176	1423	Charissa	Positive	1424
Xerxes				
## 177	1424	Xerxes	Positive	1425
Leilani				
## 178	1424	Xerxes	Positive	1425
Leilani				
## 179	1428	Jesse	Positive	1429
Harding				
## 180	1428	Jesse	Positive	1429
Harding				
## 181	1429	Harding	Positive	1430
Raphael				
## 182	1429	Harding	Positive	1430
Raphael				
## 183	1429	Harding	Positive	1430
Raphael				
## 184	1429	Harding	Positive	1430
Raphael				

```
## 185      1432        Eliana            Positive      1433
Cathleen
## 186      1432        Eliana            Positive      1433
Cathleen
## 187      1432        Eliana            Positive      1433
Cathleen
## 188      1432        Eliana            Positive      1433
Cathleen
## 189      1433        Cathleen          Positive      1434
Evangeline
## 190      1433        Cathleen          Positive      1434
Evangeline
## 191      1434        Evangeline        Positive      1435
Shafira
## 192      1434        Evangeline        Positive      1435
Shafira
## 193      1441        Lacota            Positive      1442
Raymond
## 194      1441        Lacota            Positive      1442
Raymond
## 195      1441        Lacota            Positive      1442
Raymond
## 196      1441        Lacota            Positive      1442
Raymond
## 197      1448        Jillian           Positive      1449
Lucas
## 198      1448        Jillian           Positive      1449
Lucas
## 199      1453        Yeo               Positive      1454
Oren
## 200      1453        Yeo               Positive      1454
Oren
## 201      1456        Derek             Positive      1457
Autumn
## 202      1456        Derek             Positive      1457
Autumn
## 203      1457        Autumn            Positive      1458
Iris
## 204      1458        Iris              Positive      1459
Blake
## 205      1460        Nero              Positive      1461
Harding
## 206      1460        Nero              Positive      1461
Harding
## 207      1463        Phyllis           Positive      1464
Demetrius
## 208      1467        Chaim             Positive      1468
Deanna
## 209      1468        Deanna            Positive      1469
Tanya
```

```
## 210     1468        Deanna            Positive     1469
Tanya
## 211     1469         Tanya            Positive     1470
Dacey
## 212     1471     Alexandra            Positive     1472
Winifred
## 213     1471     Alexandra            Positive     1472
Winifred
## 214     1473       Xanthus            Positive     1474
Gannon
## 215     1475        Quamar            Positive     1476
Brittany
## 216     1475        Quamar            Positive     1476
Brittany
## 217     1476      Brittany            Positive     1477
Garrett
## 218     1479         Kamal            Positive     1480
Noel
## 219     1482       Randall            Positive     1483
Adena
## 220     1485         Barry            Positive     1486
Erin
## 221     1485         Barry            Positive     1486
Erin
## 222     1489        Bertha            Positive     1490
Marsden
## 223     1489        Bertha            Positive     1490
Marsden
## 224     1490       Marsden            Positive     1491
Zoe
## 225     1490       Marsden            Positive     1491
Zoe
## 226     1491           Zoe            Positive     1492
Colby
## 227     1496       Mikayla            Positive     1497
Ishmael
## 228     1497       Ishmael            Positive     1498
Tashya
##     Second_Guys_CovidReport DateTime_of_Meeting
## 1                   Unclear 2020-02-14 00:36:23
## 2                   Unclear 2020-04-06 20:06:35
## 3                  Negative 2020-11-01 17:06:41
## 4                  Negative 2020-01-04 18:26:57
## 5                  Negative 2020-04-20 02:11:17
## 6                  Positive 2020-05-07 20:01:34
## 7                  Positive 2020-03-16 14:35:58
## 8                  Positive 2020-02-27 16:54:27
## 9                  Positive 2020-04-06 12:07:44
## 10                 Positive 2020-09-23 07:33:02
## 11                 Positive 2020-04-15 09:32:10
```

```
## 12                    Unclear 2020-05-24 18:38:17
## 13                   Negative 2020-05-23 06:12:18
## 14                   Negative 2020-12-23 23:52:40
## 15                    Unclear 2020-11-18 19:24:50
## 16                    Unclear 2020-03-11 07:22:00
## 17                   Negative 2020-04-04 19:37:43
## 18                   Negative 2020-11-29 12:49:14
## 19                   Negative 2020-01-30 20:36:51
## 20                   Negative 2020-01-31 12:19:56
## 21                   Negative 2020-02-17 20:20:07
## 22                   Negative 2020-12-24 15:51:24
## 23                   Negative 2020-06-26 20:09:01
## 24                   Negative 2020-03-25 23:58:49
## 25                   Negative 2020-09-27 03:37:25
## 26                   Positive 2020-09-27 03:37:25
## 27                    Unclear 2020-12-31 23:16:28
## 28                   Positive 2020-12-31 23:16:28
## 29                   Negative 2020-10-11 08:35:09
## 30                   Negative 2020-10-11 08:35:09
## 31                   Negative 2020-06-16 06:26:50
## 32                   Negative 2020-06-16 06:26:50
## 33                   Negative 2020-09-27 03:37:25
## 34                   Positive 2020-09-27 03:37:25
## 35                    Unclear 2020-04-22 05:26:11
## 36                   Positive 2020-04-22 05:26:11
## 37                    Unclear 2020-01-17 02:15:55
## 38                   Positive 2020-01-17 02:15:55
## 39                   Negative 2020-08-30 11:05:37
## 40                    Unclear 2020-08-30 11:05:37
## 41                   Negative 2020-11-30 09:53:08
## 42                   Positive 2020-11-30 09:53:08
## 43                   Negative 2020-08-26 16:55:45
## 44                   Positive 2020-08-26 16:55:45
## 45                   Negative 2020-02-15 15:25:29
## 46                    Unclear 2020-02-15 15:25:29
## 47                   Negative 2020-08-02 06:01:47
## 48                    Unclear 2020-08-02 06:01:47
## 49                   Negative 2020-09-19 09:49:27
## 50                   Positive 2020-09-19 09:49:27
## 51                   Negative 2020-03-16 05:06:21
## 52                   Negative 2020-03-16 05:06:21
## 53                   Negative 2020-03-25 23:24:56
## 54                   Positive 2020-03-25 23:24:56
## 55                   Negative 2020-10-04 00:10:03
## 56                   Positive 2020-10-04 00:10:03
## 57                   Negative 2020-01-19 14:48:27
## 58                   Negative 2020-05-15 17:44:35
## 59                   Negative 2020-07-13 22:59:50
## 60                   Negative 2020-12-09 05:44:25
## 61                   Positive 2020-05-17 16:58:49
```

```
## 62              Positive 2020-06-29 01:52:13
## 63              Positive 2020-07-04 02:57:55
## 64              Negative 2020-09-26 16:22:37
## 65              Positive 2020-02-17 08:08:22
## 66              Positive 2020-12-02 16:46:01
## 67              Positive 2020-06-14 15:03:22
## 68              Positive 2020-07-24 21:34:46
## 69              Positive 2020-12-03 04:05:56
## 70              Positive 2020-03-23 17:56:48
## 71              Negative 2020-08-11 19:50:24
## 72              Negative 2020-10-06 04:26:21
## 73              Positive 2020-03-02 12:59:37
## 74              Positive 2020-08-08 18:57:34
## 75              Positive 2020-02-04 16:45:00
## 76              Positive 2020-12-12 12:39:06
## 77              Positive 2020-01-25 12:41:12
## 78               Unclear 2020-10-29 13:22:43
## 79               Unclear 2020-04-25 16:36:02
## 80              Negative 2020-01-19 12:59:09
## 81              Negative 2020-07-31 22:53:13
## 82              Negative 2020-05-07 08:58:51
## 83              Negative 2020-08-03 13:29:55
## 84               Unclear 2020-07-14 17:44:23
## 85              Positive 2020-07-26 01:46:46
## 86              Positive 2020-07-26 01:46:46
## 87              Positive 2020-11-27 10:48:03
## 88              Positive 2020-11-27 10:48:03
## 89              Positive 2020-11-13 02:00:29
## 90              Positive 2020-11-13 02:00:29
## 91              Positive 2020-01-19 03:47:17
## 92              Positive 2020-01-19 03:47:17
## 93               Unclear 2020-11-06 21:28:28
## 94              Positive 2020-11-06 21:28:28
## 95              Negative 2020-11-24 03:20:33
## 96              Negative 2020-11-24 03:20:33
## 97              Negative 2020-10-12 03:58:30
## 98              Negative 2020-10-12 03:58:30
## 99              Negative 2020-02-22 02:54:05
## 100             Positive 2020-02-22 02:54:05
## 101             Negative 2020-02-04 10:15:39
## 102             Positive 2020-02-04 10:15:39
## 103              Unclear 2020-04-27 18:18:28
## 104             Negative 2020-04-27 18:18:28
## 105              Unclear 2020-12-28 03:03:41
## 106             Negative 2020-12-28 03:03:41
## 107             Negative 2020-09-02 07:23:08
## 108             Positive 2020-09-02 07:23:08
## 109             Negative 2020-03-19 00:22:18
## 110              Unclear 2020-03-19 00:22:18
## 111             Negative 2020-01-05 17:32:01
```

```
## 112                 Unclear 2020-01-05 17:32:01
## 113                Positive 2020-08-28 17:22:53
## 114                Positive 2020-08-28 17:22:53
## 115                Positive 2020-11-15 14:01:52
## 116                Positive 2020-11-15 14:01:52
## 117                Positive 2020-06-20 15:07:18
## 118                Positive 2020-06-20 15:07:18
## 119                Positive 2020-09-09 20:26:35
## 120                Negative 2020-09-09 20:26:35
## 121                Negative 2020-11-23 11:26:12
## 122                Negative 2020-11-23 11:26:12
## 123                Negative 2020-08-29 13:37:45
## 124                Negative 2020-08-29 13:37:45
## 125                Negative 2020-01-05 13:53:23
## 126                Negative 2020-01-05 13:53:23
## 127                Negative 2020-11-04 12:53:00
## 128                Negative 2020-11-04 12:53:00
## 129                Negative 2020-05-02 11:24:06
## 130                Negative 2020-05-02 11:24:06
## 131                Negative 2020-09-30 23:54:19
## 132                Negative 2020-09-30 23:54:19
## 133                Negative 2020-12-10 05:50:41
## 134                Negative 2020-12-10 05:50:41
## 135                Positive 2020-05-06 17:03:24
## 136                 Unclear 2020-05-06 17:03:24
## 137                Positive 2020-07-05 18:36:58
## 138                 Unclear 2020-07-05 18:36:58
## 139                Positive 2020-02-22 05:18:29
## 140                 Unclear 2020-02-22 05:18:29
## 141                 Unclear 2020-02-14 23:14:17
## 142                Positive 2020-02-14 23:14:17
## 143                 Unclear 2020-12-18 03:23:03
## 144                Positive 2020-12-18 03:23:03
## 145                Positive 2020-11-13 02:00:29
## 146                Positive 2020-11-13 02:00:29
## 147                Positive 2020-01-19 03:47:17
## 148                Positive 2020-01-19 03:47:17
## 149                 Unclear 2020-11-06 21:28:28
## 150                Positive 2020-11-06 21:28:28
## 151                Negative 2020-04-09 06:23:47
## 152                Positive 2020-04-09 06:23:47
## 153                Negative 2020-07-21 20:44:50
## 154                Positive 2020-07-21 20:44:50
## 155                Positive 2020-05-19 02:21:42
## 156                 Unclear 2020-05-19 02:21:42
## 157                Negative 2020-01-14 11:28:18
## 158                Negative 2020-01-14 11:28:18
## 159                Negative 2020-01-04 22:16:19
## 160                Negative 2020-01-04 22:16:19
## 161                Negative 2020-12-08 10:14:55
```

```
## 162               Negative 2020-12-08 10:14:55
## 163               Negative 2020-06-20 20:11:58
## 164               Negative 2020-06-20 20:11:58
## 165               Negative 2020-02-22 02:54:05
## 166               Positive 2020-02-22 02:54:05
## 167               Negative 2020-02-04 10:15:39
## 168               Positive 2020-02-04 10:15:39
## 169               Negative 2020-04-17 03:39:20
## 170               Negative 2020-04-17 03:39:20
## 171               Negative 2020-09-02 08:49:11
## 172               Negative 2020-09-02 08:49:11
## 173                Unclear 2020-09-18 20:46:04
## 174               Positive 2020-09-18 20:46:04
## 175                Unclear 2020-12-24 00:54:36
## 176               Positive 2020-12-24 00:54:36
## 177               Negative 2020-03-16 05:26:22
## 178               Negative 2020-03-16 05:26:22
## 179               Negative 2020-09-02 07:23:08
## 180               Positive 2020-09-02 07:23:08
## 181               Positive 2020-07-05 10:26:13
## 182               Negative 2020-07-05 10:26:13
## 183               Positive 2020-11-05 17:44:23
## 184               Negative 2020-11-05 17:44:23
## 185               Positive 2020-08-28 17:22:53
## 186               Positive 2020-08-28 17:22:53
## 187               Positive 2020-11-15 14:01:52
## 188               Positive 2020-11-15 14:01:52
## 189               Positive 2020-06-20 15:07:18
## 190               Positive 2020-06-20 15:07:18
## 191               Positive 2020-09-09 20:26:35
## 192               Negative 2020-09-09 20:26:35
## 193               Negative 2020-05-02 11:24:06
## 194               Negative 2020-05-02 11:24:06
## 195               Negative 2020-09-30 23:54:19
## 196               Negative 2020-09-30 23:54:19
## 197                Unclear 2020-12-26 15:40:00
## 198               Negative 2020-12-26 15:40:00
## 199               Negative 2020-04-02 17:44:26
## 200               Negative 2020-01-16 15:58:25
## 201               Positive 2020-01-25 19:23:34
## 202               Positive 2020-05-11 12:20:09
## 203               Positive 2020-06-02 16:48:09
## 204               Negative 2020-04-04 15:16:41
## 205                Unclear 2020-07-11 16:55:20
## 206                Unclear 2020-06-22 12:03:31
## 207                Unclear 2020-05-21 05:34:24
## 208               Positive 2020-06-21 23:35:39
## 209               Positive 2020-05-06 01:43:04
## 210               Positive 2020-05-30 03:01:33
## 211                Unclear 2020-09-24 07:45:07
```

```
## 212                  Negative 2020-08-11 07:18:29
## 213                  Negative 2020-08-07 15:14:12
## 214                  Negative 2020-05-21 02:17:35
## 215                  Positive 2020-05-06 00:38:16
## 216                  Positive 2020-05-11 02:26:58
## 217                  Negative 2020-04-28 12:04:31
## 218                   Unclear 2020-06-02 03:58:52
## 219                  Negative 2020-12-25 01:06:52
## 220                  Negative 2020-05-07 20:24:47
## 221                  Negative 2020-07-17 21:52:24
## 222                  Positive 2020-09-23 22:47:59
## 223                  Positive 2020-10-13 23:02:03
## 224                  Positive 2020-02-20 23:56:48
## 225                  Positive 2020-08-10 05:06:46
## 226                   Unclear 2020-08-18 23:13:41
## 227                  Positive 2020-12-13 19:30:39
## 228                   Unclear 2020-06-17 22:05:29
##                                              Details_of_Meeting
## 1                       mi. Duis risus odio, auctor vitae, aliquet
## 2                 quam vel sapien imperdiet ornare. In faucibus.
## 3                 Mauris ut quam vel sapien imperdiet ornare.
## 4                                       iaculis nec, eleifend
## 5                             lectus ante dictum mi, ac mattis
## 6                        et ultrices posuere cubilia Curae;
## 7                        enim, condimentum eget, volutpat
## 8                             pede. Suspendisse dui. Fusce
## 9                     sem elit, pharetra ut, pharetra sed,
## 10            est ac mattis semper, dui lectus rutrum urna,
## 11                                         Praesent eu dui.
## 12                 id risus quis diam luctus lobortis. Class
## 13                                   massa. Integer vitae
## 14                          nec, mollis vitae, posuere
## 15                     Sed molestie. Sed id risus quis
## 16                            et malesuada fames ac
## 17                            enim nisl elementum
## 18                    vel turpis. Aliquam adipiscing lobortis
## 19                       erat, in consectetuer ipsum nunc id
## 20                        Sed nulla ante, iaculis nec,
## 21                      varius. Nam porttitor scelerisque
## 22                                 eget, venenatis a,
## 23        risus. Morbi metus. Vivamus euismod urna. Nullam lobortis
## 24                                per conubia nostra,
## 25              libero lacus, varius et, euismod et, commodo at,
## 26              libero lacus, varius et, euismod et, commodo at,
## 27                  Duis elementum, dui quis accumsan convallis,
## 28                  Duis elementum, dui quis accumsan convallis,
## 29                     amet metus. Aliquam erat volutpat.
## 30                     amet metus. Aliquam erat volutpat.
## 31                     arcu imperdiet ullamcorper. Duis at
## 32                     arcu imperdiet ullamcorper. Duis at
```

```
## 33                          libero lacus, varius et, euismod et, commodo at,
## 34                          libero lacus, varius et, euismod et, commodo at,
## 35                      Mauris eu turpis. Nulla aliquet. Proin velit. Sed
## 36                      Mauris eu turpis. Nulla aliquet. Proin velit. Sed
## 37                                          vel pede blandit congue. In
## 38                                          vel pede blandit congue. In
## 39                Class aptent taciti sociosqu ad litora torquent per
## 40                Class aptent taciti sociosqu ad litora torquent per
## 41                                              in molestie tortor
## 42                                              in molestie tortor
## 43                              vulputate, lacus. Cras interdum.
## 44                              vulputate, lacus. Cras interdum.
## 45                                         Duis a mi fringilla
## 46                                         Duis a mi fringilla
## 47                                   lorem. Donec elementum,
## 48                                   lorem. Donec elementum,
## 49                    Lorem ipsum dolor sit amet, consectetuer
## 50                    Lorem ipsum dolor sit amet, consectetuer
## 51                                     Donec fringilla. Donec
## 52                                     Donec fringilla. Donec
## 53          lacus. Nulla tincidunt, neque vitae semper egestas, urna
## 54          lacus. Nulla tincidunt, neque vitae semper egestas, urna
## 55                    a, scelerisque sed, sapien. Nunc pulvinar arcu
## 56                    a, scelerisque sed, sapien. Nunc pulvinar arcu
## 57                                                   In nec orci.
## 58              natoque penatibus et magnis dis parturient montes,
## 59                           risus. In mi pede, nonummy ut, molestie
## 60         lorem semper auctor. Mauris vel turpis. Aliquam adipiscing
## 61                                vulputate, nisi sem semper erat, in
## 62             ornare placerat, orci lacus vestibulum lorem, sit amet
## 63      nec metus facilisis lorem tristique aliquet. Phasellus fermentum
## 64                              velit. Aliquam nisl. Nulla eu
## 65                              ornare tortor at risus. Nunc ac
## 66                      ullamcorper eu, euismod ac, fermentum
## 67                                         Mauris eu turpis.
## 68              feugiat placerat velit. Quisque varius. Nam porttitor
## 69                                     penatibus et magnis
## 70                              Sed eget lacus. Mauris
## 71                                     Donec tempor, est
## 72              interdum. Sed auctor odio a purus. Duis elementum,
## 73                           ornare lectus justo eu arcu. Morbi
## 74                              ac turpis egestas. Aliquam
## 75                           et, rutrum non, hendrerit id,
## 76                           eu, odio. Phasellus at augue id
## 77         consequat purus. Maecenas libero est, congue a, aliquet
## 78                              vitae velit egestas lacinia.
## 79                                 libero mauris, aliquam
## 80                    Proin mi. Aliquam gravida mauris ut mi.
## 81              laoreet, libero et tristique pellentesque, tellus
## 82                                     feugiat non, lobortis
```

```
## 83                                           vestibulum lorem, sit
## 84                                    metus vitae velit egestas lacinia. Sed
## 85                               mi felis, adipiscing fringilla, porttitor
## 86                               mi felis, adipiscing fringilla, porttitor
## 87                                            adipiscing elit. Etiam
## 88                                            adipiscing elit. Etiam
## 89                                                   amet diam eu
## 90                                                   amet diam eu
## 91                             eget mollis lectus pede et risus. Quisque
## 92                             eget mollis lectus pede et risus. Quisque
## 93                          eu sem. Pellentesque ut ipsum ac mi eleifend
## 94                          eu sem. Pellentesque ut ipsum ac mi eleifend
## 95                                               non, hendrerit id,
## 96                                               non, hendrerit id,
## 97                                                  orci luctus et
## 98                                                  orci luctus et
## 99                    cursus. Integer mollis. Integer tincidunt aliquam
## 100                   cursus. Integer mollis. Integer tincidunt aliquam
## 101                                              dui lectus rutrum
## 102                                              dui lectus rutrum
## 103                                       montes, nascetur ridiculus
## 104                                       montes, nascetur ridiculus
## 105         molestie orci tincidunt adipiscing. Mauris molestie pharetra
## 106         molestie orci tincidunt adipiscing. Mauris molestie pharetra
## 107                            felis. Donec tempor, est ac mattis semper,
## 108                            felis. Donec tempor, est ac mattis semper,
## 109                   nec, diam. Duis mi enim, condimentum eget, volutpat
## 110                   nec, diam. Duis mi enim, condimentum eget, volutpat
## 111                   Ut tincidunt orci quis lectus. Nullam suscipit, est
## 112                   Ut tincidunt orci quis lectus. Nullam suscipit, est
## 113         Quisque fringilla euismod enim. Etiam gravida molestie arcu.
## 114         Quisque fringilla euismod enim. Etiam gravida molestie arcu.
## 115                            pretium neque. Morbi quis urna. Nunc
## 116                            pretium neque. Morbi quis urna. Nunc
## 117                                                at sem molestie
## 118                                                at sem molestie
## 119                                             ac orci. Ut semper
## 120                                             ac orci. Ut semper
## 121                                         molestie in, tempus eu,
## 122                                         molestie in, tempus eu,
## 123                                        eu tellus. Phasellus elit
## 124                                        eu tellus. Phasellus elit
## 125 vulputate, posuere vulputate, lacus. Cras interdum. Nunc sollicitudin
## 126 vulputate, posuere vulputate, lacus. Cras interdum. Nunc sollicitudin
## 127         sit amet, consectetuer adipiscing elit. Etiam laoreet, libero
## 128         sit amet, consectetuer adipiscing elit. Etiam laoreet, libero
## 129                            placerat. Cras dictum ultricies ligula.
## 130                            placerat. Cras dictum ultricies ligula.
## 131                                     sapien molestie orci tincidunt
## 132                                     sapien molestie orci tincidunt
```

```
## 133        lacus. Cras interdum. Nunc sollicitudin commodo ipsum. Suspendisse
## 134        lacus. Cras interdum. Nunc sollicitudin commodo ipsum. Suspendisse
## 135                                     nec, imperdiet nec, leo. Morbi neque
## 136                                     nec, imperdiet nec, leo. Morbi neque
## 137                                             tellus. Aenean egestas
## 138                                             tellus. Aenean egestas
## 139                            blandit congue. In scelerisque scelerisque
## 140                            blandit congue. In scelerisque scelerisque
## 141                                             a nunc. In at pede.
## 142                                             a nunc. In at pede.
## 143                                             eu, placerat eget,
## 144                                             eu, placerat eget,
## 145                                                 amet diam eu
## 146                                                 amet diam eu
## 147                         eget mollis lectus pede et risus. Quisque
## 148                         eget mollis lectus pede et risus. Quisque
## 149                     eu sem. Pellentesque ut ipsum ac mi eleifend
## 150                     eu sem. Pellentesque ut ipsum ac mi eleifend
## 151                        non arcu. Vivamus sit amet risus. Donec
## 152                        non arcu. Vivamus sit amet risus. Donec
## 153                                         neque sed sem egestas
## 154                                         neque sed sem egestas
## 155                       dictum augue malesuada malesuada. Integer
## 156                       dictum augue malesuada malesuada. Integer
## 157               Donec fringilla. Donec feugiat metus sit amet ante.
## 158               Donec fringilla. Donec feugiat metus sit amet ante.
## 159                                             sodales elit erat
## 160                                             sodales elit erat
## 161                                     lectus quis massa. Mauris
## 162                                     lectus quis massa. Mauris
## 163                 turpis. In condimentum. Donec at arcu. Vestibulum
## 164                 turpis. In condimentum. Donec at arcu. Vestibulum
## 165                 cursus. Integer mollis. Integer tincidunt aliquam
## 166                 cursus. Integer mollis. Integer tincidunt aliquam
## 167                                             dui lectus rutrum
## 168                                             dui lectus rutrum
## 169                             cursus purus. Nullam scelerisque
## 170                             cursus purus. Nullam scelerisque
## 171           aliquet lobortis, nisi nibh lacinia orci, consectetuer
## 172           aliquet lobortis, nisi nibh lacinia orci, consectetuer
## 173                                             senectus et netus
## 174                                             senectus et netus
## 175                 non lorem vitae odio sagittis semper. Nam tempor
## 176                 non lorem vitae odio sagittis semper. Nam tempor
## 177                             vehicula aliquet libero. Integer in
## 178                             vehicula aliquet libero. Integer in
## 179                     felis. Donec tempor, est ac mattis semper,
## 180                     felis. Donec tempor, est ac mattis semper,
## 181                             metus. In lorem. Donec elementum,
## 182                             metus. In lorem. Donec elementum,
```

```
## 183                                            id enim. Curabitur massa. Vestibulum
## 184                                            id enim. Curabitur massa. Vestibulum
## 185          Quisque fringilla euismod enim. Etiam gravida molestie arcu.
## 186          Quisque fringilla euismod enim. Etiam gravida molestie arcu.
## 187                                       pretium neque. Morbi quis urna. Nunc
## 188                                       pretium neque. Morbi quis urna. Nunc
## 189                                                        at sem molestie
## 190                                                        at sem molestie
## 191                                                     ac orci. Ut semper
## 192                                                     ac orci. Ut semper
## 193                              placerat. Cras dictum ultricies ligula.
## 194                              placerat. Cras dictum ultricies ligula.
## 195                                       sapien molestie orci tincidunt
## 196                                       sapien molestie orci tincidunt
## 197                              vel, vulputate eu, odio. Phasellus at
## 198                              vel, vulputate eu, odio. Phasellus at
## 199                    pharetra ut, pharetra sed, hendrerit a, arcu.
## 200                              elementum at, egestas a, scelerisque
## 201                              at, velit. Cras lorem lorem, luctus
## 202                                 erat vel pede blandit congue.
## 203                              Phasellus nulla. Integer vulputate,
## 204                    erat vel pede blandit congue. In scelerisque
## 205      In faucibus. Morbi vehicula. Pellentesque tincidunt tempus
## 206                                                risus. Donec nibh
## 207      placerat velit. Quisque varius. Nam porttitor scelerisque neque.
## 208               Suspendisse non leo. Vivamus nibh dolor, nonummy ac,
## 209                              in sodales elit erat vitae risus.
## 210                              ultrices. Vivamus rhoncus. Donec
## 211               posuere at, velit. Cras lorem lorem, luctus ut,
## 212                              libero. Donec consectetuer mauris id
## 213               parturient montes, nascetur ridiculus mus. Proin vel
## 214                              eget, volutpat ornare, facilisis
## 215                    amet, consectetuer adipiscing elit. Aliquam
## 216               sagittis semper. Nam tempor diam dictum sapien. Aenean
## 217                                            ipsum porta elit, a
## 218      interdum. Nunc sollicitudin commodo ipsum. Suspendisse non leo.
## 219                              Phasellus at augue id ante dictum
## 220               Pellentesque habitant morbi tristique senectus
## 221                              quam vel sapien imperdiet ornare.
## 222               mollis vitae, posuere at, velit. Cras lorem lorem,
## 223                              placerat. Cras dictum ultricies
## 224               libero nec ligula consectetuer rhoncus. Nullam
## 225               amet ante. Vivamus non lorem vitae odio sagittis
## 226                                    sem egestas blandit.
## 227                              et ultrices posuere cubilia
## 228                    ac arcu. Nunc mauris. Morbi non sapien
```

QUERY 6 - EXTRA QUERY

A QUERY with HAVING clause to count the no of people per city above 60 years in age, who took the Covid-19 Assessment survey, and suspected an infection, Only listing cities with more than 10 distinct suspects.

SQL:

 SELECT distinct Place.city, count(distinct Assessment.TakerID) as "Total Covid Suspects around Boston region, with age greater than 50" FROM Place INNER JOIN AppUser on Place.placeid=AppUser.addressid INNER JOIN Assessment on AppUser.UserID=Assessment.TakerID WHERE Assessment.CovidSuspected=1 AND AppUser.Birthdate<'1960-01-01' Group By Place.City HAVING count(distinct Assessment.TakerID)>10;

RESULT SCREENSHOTS:

city	Total Covid Suspects around Boston region,...	
▶ BOSTON	15	
DARTMOUTH	52	

R-Notebook Execution

```
val6 <- dbFetch(dbSendQuery(conn,"SELECT distinct Place.city,
count(distinct Assessment.TakerID) as
TotalCovidSuspectsInBostonregionAgeGreaterThan50
FROM Place
INNER JOIN AppUser on Place.placeid=AppUser.addressid
INNER JOIN Assessment on AppUser.UserID=Assessment.TakerID
WHERE Assessment.CovidSuspected=1 AND AppUser.Birthdate<'1960-01-01'
Group By Place.City HAVING count(distinct Assessment.TakerID)>10;"))

val6

##         city TotalCovidSuspectsInBostonregionAgeGreaterThan50
## 1    BOSTON                                               15
## 2 DARTMOUTH                                               52
```

QUERY 7 - EXTRA QUERY Exposure events and places and Massachusetts. This query backtracks the visit log of a COVID-19 positive persons and returns exact places where they visited and spent some time.

SELECT m.placename,streetarea, m.city,u.EventStartTime as ExposureStart, u.EventEndTime as ExposureEnd FROM visit v INNER JOIN AppUser a on

v.VisitingUserID=a.UserID INNER JOIN Person p on a.userid=p.PersonID INNER JOIN
PersonPhone s on p.PersonID=s.PersonID INNER JOIN Place m on v.VisitPlaceID=m.placeid
INNER JOIN UserEvents u on v.VisitID=u.EventID INNER JOIN HealthReportCheck h on
a.UserID=h.UserID WHERE h.TestResult='POSITIVE' AND M.state='MA' AND
datediff(h.ReportDate, u.EventStartTime)<20 AND datediff(h.ReportDate,
u.EventStartTime)>-20

10 row(s) returned

RESULT SCREENSHOTS:

placename	streetarea	city	ExposureStart	ExposureEnd
Sawayn Knoll	PLAINS FIELD DRIVE	DARTMOUTH	2020-07-11 20:13:24	2020-07-12 01:04:13
Kuhic Brooks	MEADOW SHORES ROAD	DARTMOUTH	2020-07-03 22:31:00	2020-07-04 17:55:46
Kuhic Brooks	MEADOW SHORES ROAD	DARTMOUTH	2020-07-03 22:31:00	2020-07-04 17:55:46
Kyra Plaza	MEADOW SHORES ROAD	DARTMOUTH	2020-07-18 06:00:38	2020-07-19 02:35:39
Kyra Plaza	MEADOW SHORES ROAD	DARTMOUTH	2020-07-18 06:00:38	2020-07-19 02:35:39
Kyra Plaza	MEADOW SHORES ROAD	DARTMOUTH	2020-07-19 11:29:43	2020-07-20 03:10:27
Satterfield Flats	PENNIKESE LANE	DARTMOUTH	2020-07-09 13:13:58	2020-07-10 12:30:14
Kuhic Brooks	MEADOW SHORES ROAD	DARTMOUTH	2020-07-14 03:18:15	2020-07-14 22:08:22
Wisoky Turnpike	WAMSUTTA STREET	DARTMOUTH	2020-07-11 11:50:19	2020-07-12 08:02:00
Becker Vista	BEACH ROSE LANE	DARTMOUTH	2020-07-06 17:38:20	2020-07-06 19:17:12

R-Notebook Execution

```
val7 <- dbFetch(dbSendQuery(conn,"SELECT m.placename,streetarea,
m.city,u.EventStartTime as ExposureStart, u.EventEndTime as ExposureEnd FROM
visit v
INNER JOIN AppUser a on v.VisitingUserID=a.UserID
INNER JOIN Person p on a.userid=p.PersonID
INNER JOIN PersonPhone s on p.PersonID=s.PersonID
INNER JOIN Place m on v.VisitPlaceID=m.placeid
INNER JOIN UserEvents u on v.VisitID=u.EventID
INNER JOIN HealthReportCheck h on a.UserID=h.UserID
WHERE h.TestResult='POSITIVE'
AND m.state='MA'
AND datediff(h.ReportDate, u.EventStartTime)<20
AND datediff(h.ReportDate, u.EventStartTime)>-20
"))

val7

##            placename          streetarea        city       ExposureStart
## 1       Sawayn Knoll PLAINS FIELD DRIVE DARTMOUTH 2020-07-11 20:13:24
## 2       Kuhic Brooks MEADOW SHORES ROAD DARTMOUTH 2020-07-03 22:31:00
## 3       Kuhic Brooks MEADOW SHORES ROAD DARTMOUTH 2020-07-03 22:31:00
## 4         Kyra Plaza MEADOW SHORES ROAD DARTMOUTH 2020-07-18 06:00:38
## 5         Kyra Plaza MEADOW SHORES ROAD DARTMOUTH 2020-07-18 06:00:38
## 6         Kyra Plaza MEADOW SHORES ROAD DARTMOUTH 2020-07-19 11:29:43
## 7  Satterfield Flats     PENNIKESE LANE DARTMOUTH 2020-07-09 13:13:58
```

```
## 8        Kuhic Brooks MEADOW SHORES ROAD DARTMOUTH 2020-07-14 03:18:15
## 9    Wisoky Turnpike    WAMSUTTA STREET DARTMOUTH 2020-07-11 11:50:19
## 10      Becker Vista    BEACH ROSE LANE DARTMOUTH 2020-07-06 17:38:20
##              ExposureEnd
## 1   2020-07-12 01:04:13
## 2   2020-07-04 17:55:46
## 3   2020-07-04 17:55:46
## 4   2020-07-19 02:35:39
## 5   2020-07-19 02:35:39
## 6   2020-07-20 03:10:27
## 7   2020-07-10 12:30:14
## 8   2020-07-14 22:08:22
## 9   2020-07-12 08:02:00
## 10  2020-07-06 19:17:12
```

11. Plotting MySQL-Integrated Graphs in R

```r
library(RMySQL)
library(DBI)
library(RColorBrewer)
conn = dbConnect(MySQL(), userName="root", password="atcbtra123",
dbname="ContactTracingDB", host="localhost",port = 3306)
```

```
##      UserId TestResult HealthStatus
## 1    1001    Positive          sick
## 2    1002     Unclear       healthy
## 3    1003     Unclear          sick
## 4    1004    Positive          sick
## 5    1005    Positive       healthy
## 6    1006    Negative       healthy
## 7    1007    Positive       healthy
## 8    1008    Positive          sick
## 9    1009     Unclear       healthy
## 10   1010    Positive       healthy
## 11   1011    Positive          sick
## 12   1012    Positive       healthy
## 13   1013    Negative       healthy
## 14   1014    Negative       healthy
## 15   1015    Negative       healthy
## 16   1016    Negative       healthy
## 17   1017     Unclear          sick
## 18   1018    Positive       healthy
## 19   1019    Negative       healthy
## 20   1020    Positive          sick
## 21   1021    Positive          sick
## 22   1022    Positive       healthy
## 23   1023    Negative       healthy
## 24   1024     Unclear          sick
## 25   1025    Negative       healthy
```

```
## 26      1026     Unclear       healthy
## 27      1027    Positive          sick
## 28      1028     Unclear       healthy
## 29      1029    Positive       healthy
## 30      1030    Negative       healthy
## 31      1031     Unclear          sick
## 32      1032     Unclear       healthy
## 33      1033    Positive       healthy
## 34      1034     Unclear          sick
## 35      1035    Positive          sick
## 36      1036    Negative          sick
## 37      1037    Positive       healthy
## 38      1038    Negative       healthy
## 39      1039    Negative       healthy
## 40      1040    Negative          sick
## 41      1041     Unclear          sick
## 42      1042    Negative          sick
## 43      1043    Positive       healthy
## 44      1044    Negative       healthy
## 45      1045    Negative       healthy
## 46      1046    Negative          sick
## 47      1047    Negative          sick
## 48      1048    Negative       healthy
## 49      1049     Unclear          sick
## 50      1050    Negative       healthy
## 51      1051    Negative       healthy
## 52      1052     Unclear          sick
## 53      1053     Unclear       healthy
## 54      1054    Positive          sick
## 55      1055    Negative          sick
## 56      1056    Negative          sick
## 57      1057    Positive       healthy
## 58      1058    Negative       healthy
## 59      1059    Negative       healthy
## 60      1060     Unclear          sick
## 61      1061     Unclear          sick
## 62      1062    Negative       healthy
## 63      1063    Negative       healthy
## 64      1064    Negative       healthy
## 65      1065    Negative       healthy
## 66      1066     Unclear       healthy
## 67      1067    Negative       healthy
## 68      1068    Positive          sick
## 69      1069     Unclear          sick
## 70      1070    Negative          sick
## 71      1071    Negative       healthy
## 72      1072    Negative          sick
## 73      1073     Unclear       healthy
## 74      1074     Unclear          sick
## 75      1075     Unclear       healthy
```

```
## 76    1076    Negative       healthy
## 77    1077     Unclear       healthy
## 78    1078    Negative          sick
## 79    1079     Unclear          sick
## 80    1080    Negative       healthy
## 81    1081     Unclear          sick
## 82    1082     Unclear          sick
## 83    1083    Negative       healthy
## 84    1084    Positive       healthy
## 85    1085    Negative          sick
## 86    1086    Negative       healthy
## 87    1087     Unclear          sick
## 88    1088    Negative       healthy
## 89    1089     Unclear       healthy
## 90    1090     Unclear       healthy
## 91    1091    Negative          sick
## 92    1092    Positive          sick
## 93    1093    Negative       healthy
## 94    1094    Negative          sick
## 95    1095    Negative          sick
## 96    1096     Unclear       healthy
## 97    1097     Unclear          sick
## 98    1098     Unclear          sick
## 99    1099     Unclear       healthy
## 100   1100    Negative          sick
## 101   1201     Unclear          sick
## 102   1202     Unclear          sick
## 103   1203    Negative       healthy
## 104   1204    Negative          sick
## 105   1205    Negative          sick
## 106   1206     Unclear       healthy
## 107   1207    Negative          sick
## 108   1208    Negative          sick
## 109   1209    Negative          sick
## 110   1210    Negative          sick
## 111   1211    Negative       healthy
## 112   1212    Negative       healthy
## 113   1213    Negative       healthy
## 114   1214    Negative          sick
## 115   1215    Negative          sick
## 116   1216    Negative       healthy
## 117   1217    Negative       healthy
## 118   1218    Negative       healthy
## 119   1219    Negative          sick
## 120   1220    Negative       healthy
## 121   1221     Unclear          sick
## 122   1222    Negative       healthy
## 123   1223     Unclear          sick
## 124   1224    Negative          sick
## 125   1225    Negative          sick
```

```
## 126    1226    Negative    healthy
## 127    1227    Negative    healthy
## 128    1228    Negative       sick
## 129    1229    Negative    healthy
## 130    1230    Negative    healthy
## 131    1231    Negative       sick
## 132    1232     Unclear       sick
## 133    1233    Negative    healthy
## 134    1234    Positive       sick
## 135    1235    Negative       sick
## 136    1236    Negative    healthy
## 137    1237    Negative    healthy
## 138    1238    Negative    healthy
## 139    1239     Unclear       sick
## 140    1240    Negative       sick
## 141    1241    Negative    healthy
## 142    1242    Negative    healthy
## 143    1243     Unclear       sick
## 144    1244    Negative    healthy
## 145    1245    Negative    healthy
## 146    1246    Negative       sick
## 147    1247    Negative    healthy
## 148    1248    Negative    healthy
## 149    1249    Negative    healthy
## 150    1250    Negative    healthy
## 151    1251    Negative    healthy
## 152    1252     Unclear       sick
## 153    1253    Negative    healthy
## 154    1254     Unclear       sick
## 155    1255    Negative       sick
## 156    1256    Negative    healthy
## 157    1257    Negative    healthy
## 158    1258    Negative    healthy
## 159    1259    Negative       sick
## 160    1260    Positive       sick
## 161    1261    Negative       sick
## 162    1262     Unclear       sick
## 163    1263    Positive       sick
## 164    1264     Unclear       sick
## 165    1265    Negative    healthy
## 166    1266    Negative       sick
## 167    1267    Negative    healthy
## 168    1268    Negative    healthy
## 169    1269    Negative    healthy
## 170    1270    Negative       sick
## 171    1271    Negative    healthy
## 172    1272    Negative    healthy
## 173    1273    Negative    healthy
## 174    1274    Negative       sick
## 175    1275    Negative       sick
```

```
## 176    1276    Positive        sick
## 177    1277     Unclear        sick
## 178    1278    Negative     healthy
## 179    1279     Unclear        sick
## 180    1280     Unclear        sick
## 181    1281    Negative     healthy
## 182    1282    Negative        sick
## 183    1283    Negative     healthy
## 184    1284    Negative        sick
## 185    1285    Negative     healthy
## 186    1286    Negative        sick
## 187    1287    Negative     healthy
## 188    1288    Negative        sick
## 189    1289     Unclear        sick
## 190    1290    Negative     healthy
## 191    1291     Unclear        sick
## 192    1292    Negative     healthy
## 193    1293    Negative     healthy
## 194    1294    Negative     healthy
## 195    1295    Negative        sick
## 196    1296    Negative     healthy
## 197    1297    Negative     healthy
## 198    1298     Unclear        sick
## 199    1299    Negative     healthy
## 200    1300    Negative     healthy
## 201    1251    Positive        sick
## 202    1252    Negative     healthy
## 203    1253    Negative     healthy
## 204    1254    Positive        sick
## 205    1255    Positive        sick
## 206    1256    Negative     healthy
## 207    1257     Unclear        sick
## 208    1258    Negative     healthy
## 209    1259    Negative     healthy
## 210    1260    Positive        sick
## 211    1261    Positive        sick
## 212    1262    Positive        sick
## 213    1263    Positive        sick
## 214    1264    Positive        sick
## 215    1265     Unclear        sick
## 216    1266    Negative     healthy
## 217    1267     Unclear        sick
## 218    1268    Positive        sick
## 219    1269    Negative     healthy
## 220    1270    Positive        sick
## 221    1271    Positive        sick
## 222    1272    Positive        sick
## 223    1273    Positive        sick
## 224    1274     Unclear        sick
## 225    1275     Unclear        sick
```

```
## 226   1276   Unclear        sick
## 227   1277   Positive       sick
## 228   1278   Positive       sick
## 229   1279   Negative    healthy
## 230   1280   Negative    healthy
## 231   1281   Negative    healthy
## 232   1282   Negative    healthy
## 233   1283   Positive       sick
## 234   1284   Unclear        sick
## 235   1285   Negative    healthy
## 236   1286   Positive       sick
## 237   1287   Negative    healthy
## 238   1288   Unclear        sick
## 239   1289   Positive       sick
## 240   1290   Negative    healthy
## 241   1291   Positive       sick
## 242   1292   Positive       sick
## 243   1293   Negative    healthy
## 244   1294   Negative    healthy
## 245   1295   Positive       sick
## 246   1296   Positive       sick
## 247   1297   Negative    healthy
## 248   1298   Unclear        sick
## 249   1299   Negative    healthy
## 250   1300   Positive       sick
## 251   1301   Negative    healthy
## 252   1302   Positive       sick
## 253   1303   Unclear        sick
## 254   1304   Negative    healthy
## 255   1305   Negative    healthy
## 256   1306   Positive       sick
## 257   1307   Negative    healthy
## 258   1308   Positive       sick
## 259   1309   Negative    healthy
## 260   1310   Positive       sick
## 261   1311   Negative    healthy
## 262   1312   Negative    healthy
## 263   1313   Negative    healthy
## 264   1314   Positive       sick
## 265   1315   Positive       sick
## 266   1316   Positive       sick
## 267   1317   Negative    healthy
## 268   1318   Positive       sick
## 269   1319   Negative    healthy
## 270   1320   Positive       sick
## 271   1321   Positive       sick
## 272   1322   Positive       sick
## 273   1323   Unclear        sick
## 274   1324   Unclear        sick
## 275   1325   Negative    healthy
```

```
## 276    1326    Negative      healthy
## 277    1327     Unclear          sick
## 278    1328    Positive         sick
## 279    1329    Positive         sick
## 280    1330    Positive         sick
## 281    1331    Negative      healthy
## 282    1332    Negative      healthy
## 283    1333    Negative      healthy
## 284    1334    Negative      healthy
## 285    1335    Positive         sick
## 286    1336    Positive         sick
## 287    1337    Positive         sick
## 288    1338    Positive         sick
## 289    1339    Positive         sick
## 290    1340     Unclear         sick
## 291    1341    Negative      healthy
## 292    1342    Negative      healthy
## 293    1343    Negative      healthy
## 294    1344    Negative      healthy
## 295    1345     Unclear         sick
## 296    1346    Positive         sick
## 297    1347     Unclear         sick
## 298    1348    Positive         sick
## 299    1349    Negative      healthy
## 300    1350    Negative      healthy
## 301    1351     Unclear         sick
## 302    1352    Negative         sick
## 303    1353     Unclear         sick
## 304    1354    Positive         sick
## 305    1355    Negative      healthy
## 306    1356    Negative         sick
## 307    1357    Negative      healthy
## 308    1358    Negative      healthy
## 309    1359    Negative      healthy
## 310    1360    Negative      healthy
## 311    1361    Negative      healthy
## 312    1362    Negative      healthy
## 313    1363    Negative      healthy
## 314    1364    Negative      healthy
## 315    1365    Negative      healthy
## 316    1366     Unclear         sick
## 317    1367    Negative         sick
## 318    1368    Negative      healthy
## 319    1369    Negative      healthy
## 320    1370     Unclear         sick
## 321    1371    Negative      healthy
## 322    1372    Negative      healthy
## 323    1373    Negative         sick
## 324    1374    Negative      healthy
## 325    1375    Negative         sick
```

```
## 326    1376    Negative        healthy
## 327    1377     Unclear           sick
## 328    1378    Negative        healthy
## 329    1379    Negative        healthy
## 330    1380     Unclear           sick
## 331    1381    Negative        healthy
## 332    1382    Negative           sick
## 333    1383    Negative        healthy
## 334    1384    Negative        healthy
## 335    1385    Negative        healthy
## 336    1386    Negative        healthy
## 337    1387    Positive           sick
## 338    1388    Negative        healthy
## 339    1389     Unclear           sick
## 340    1390     Unclear           sick
## 341    1391     Unclear           sick
## 342    1392    Negative           sick
## 343    1393    Negative        healthy
## 344    1394    Negative        healthy
## 345    1395    Negative           sick
## 346    1396    Positive           sick
## 347    1397     Unclear           sick
## 348    1398    Positive           sick
## 349    1399    Positive           sick
## 350    1400    Positive           sick
## 351    1401    Positive           sick
## 352    1402     Unclear           sick
## 353    1403    Negative        healthy
## 354    1404    Positive           sick
## 355    1405    Negative        healthy
## 356    1406    Positive           sick
## 357    1407    Negative        healthy
## 358    1408    Negative        healthy
## 359    1409    Negative        healthy
## 360    1410     Unclear           sick
## 361    1411    Negative        healthy
## 362    1412    Negative        healthy
## 363    1413    Negative        healthy
## 364    1414    Positive           sick
## 365    1415    Negative        healthy
## 366    1416    Negative        healthy
## 367    1417    Positive           sick
## 368    1418     Unclear           sick
## 369    1419     Unclear           sick
## 370    1420    Negative        healthy
## 371    1421    Negative        healthy
## 372    1422    Negative        healthy
## 373    1423     Unclear           sick
## 374    1424     Unclear           sick
## 375    1425    Negative        healthy
```

```
## 376   1426    Unclear        sick
## 377   1427   Negative      healthy
## 378   1428   Positive        sick
## 379   1429   Negative      healthy
## 380   1430   Positive        sick
## 381   1431   Negative      healthy
## 382   1432   Positive        sick
## 383   1433   Positive        sick
## 384   1434   Positive        sick
## 385   1435   Positive        sick
## 386   1436   Negative      healthy
## 387   1437   Negative      healthy
## 388   1438    Unclear        sick
## 389   1439   Positive        sick
## 390   1440   Negative      healthy
## 391   1441   Positive        sick
## 392   1442   Negative      healthy
## 393   1443   Positive        sick
## 394   1444   Negative      healthy
## 395   1445   Positive        sick
## 396   1446   Positive        sick
## 397   1447   Positive        sick
## 398   1448    Unclear        sick
## 399   1449    Unclear        sick
## 400   1450   Negative      healthy
## 401   1400   Positive        sick
## 402   1401   Positive        sick
## 403   1402   Positive        sick
## 404   1403   Positive        sick
## 405   1404    Unclear        sick
## 406   1405   Negative      healthy
## 407   1406    Unclear        sick
## 408   1407   Negative      healthy
## 409   1408   Positive        sick
## 410   1409   Negative      healthy
## 411   1410   Negative      healthy
## 412   1411   Positive        sick
## 413   1412   Negative      healthy
## 414   1413   Negative      healthy
## 415   1414   Positive        sick
## 416   1415   Positive        sick
## 417   1416   Negative      healthy
## 418   1417    Unclear        sick
## 419   1418   Negative      healthy
## 420   1419    Unclear        sick
## 421   1420    Unclear        sick
## 422   1421    Unclear        sick
## 423   1422   Negative      healthy
## 424   1423   Positive        sick
## 425   1424   Positive        sick
```

```
## 426   1425    Negative        healthy
## 427   1426    Negative        healthy
## 428   1427     Unclear           sick
## 429   1428    Positive           sick
## 430   1429    Positive           sick
## 431   1430    Negative           sick
## 432   1431     Unclear           sick
## 433   1432    Positive           sick
## 434   1433    Positive        healthy
## 435   1434    Positive           sick
## 436   1435    Negative           sick
## 437   1436    Negative           sick
## 438   1437    Negative        healthy
## 439   1438     Unclear           sick
## 440   1439    Negative        healthy
## 441   1440    Negative           sick
## 442   1441    Positive           sick
## 443   1442    Negative           sick
## 444   1443    Negative        healthy
## 445   1444    Negative           sick
## 446   1445    Negative           sick
## 447   1446     Unclear           sick
## 448   1447     Unclear           sick
## 449   1448    Positive           sick
## 450   1449    Negative        healthy
## 451   1450    Negative        healthy
## 452   1451     Unclear           sick
## 453   1452    Negative        healthy
## 454   1453    Positive           sick
## 455   1454    Negative        healthy
## 456   1455    Negative        healthy
## 457   1456    Positive           sick
## 458   1457    Positive           sick
## 459   1458    Positive           sick
## 460   1459    Negative        healthy
## 461   1460    Positive           sick
## 462   1461     Unclear           sick
## 463   1462    Negative        healthy
## 464   1463    Positive        healthy
## 465   1464     Unclear           sick
## 466   1465    Negative        healthy
## 467   1466    Negative        healthy
## 468   1467    Positive           sick
## 469   1468    Positive           sick
## 470   1469    Positive           sick
## 471   1470     Unclear           sick
## 472   1471    Positive           sick
## 473   1472    Negative        healthy
## 474   1473    Positive           sick
## 475   1474    Negative        healthy
```

```
## 476    1475    Positive       sick
## 477    1476    Positive       sick
## 478    1477    Negative      healthy
## 479    1478     Unclear       sick
## 480    1479    Positive       sick
## 481    1480     Unclear       sick
## 482    1481    Negative      healthy
## 483    1482    Positive       sick
## 484    1483    Negative      healthy
## 485    1484     Unclear       sick
## 486    1485    Positive       sick
## 487    1486    Negative      healthy
## 488    1487    Negative      healthy
## 489    1488     Unclear      healthy
## 490    1489    Positive       sick
## 491    1490    Positive       sick
## 492    1491    Positive       sick
## 493    1492     Unclear       sick
## 494    1493     Unclear      healthy
## 495    1494    Negative      healthy
## 496    1495    Negative      healthy
## 497    1496    Positive       sick
## 498    1497    Positive       sick
## 499    1498     Unclear      healthy
## 500    1499    Positive       sick
##      CASE \n    WHEN TestResult ="Positive" THEN "The user is COVID-19
Positive."\n    WHEN TestResult = "Unclear" AND HealthStatus = "Sick" THEN
"The user may be COVID-19 Positive"\n    WHEN TestResult = "Negative" AND
HealthStatus = "Sick" THEN "The user is COV
## 1
The user is COVID-19 Positive.
## 2
Patient Status Unknown
## 3
The user may be COVID-19 Positive
## 4
The user is COVID-19 Positive.
## 5
The user is COVID-19 Positive.
## 6
The user is COVID-19 Free And Healthy
## 7
The user is COVID-19 Positive.
## 8
The user is COVID-19 Positive.
## 9
Patient Status Unknown
## 10
The user is COVID-19 Positive.
## 11
```

The user is COVID-19 Positive.
12
The user is COVID-19 Positive.
13
The user is COVID-19 Free And Healthy
14
The user is COVID-19 Free And Healthy
15
The user is COVID-19 Free And Healthy
16
The user is COVID-19 Free And Healthy
17
The user may be COVID-19 Positive
18
The user is COVID-19 Positive.
19
The user is COVID-19 Free And Healthy
20
The user is COVID-19 Positive.
21
The user is COVID-19 Positive.
22
The user is COVID-19 Positive.
23
The user is COVID-19 Free And Healthy
24
The user may be COVID-19 Positive
25
The user is COVID-19 Free And Healthy
26
Patient Status Unknown
27
The user is COVID-19 Positive.
28
Patient Status Unknown
29
The user is COVID-19 Positive.
30
The user is COVID-19 Free And Healthy
31
The user may be COVID-19 Positive
32
Patient Status Unknown
33
The user is COVID-19 Positive.
34
The user may be COVID-19 Positive
35
The user is COVID-19 Positive.
36

The user is COVID-19 Negative but suffers from some ailment
37
The user is COVID-19 Positive.
38
The user is COVID-19 Free And Healthy
39
The user is COVID-19 Free And Healthy
40
The user is COVID-19 Negative but suffers from some ailment
41
The user may be COVID-19 Positive
42
The user is COVID-19 Negative but suffers from some ailment
43
The user is COVID-19 Positive.
44
The user is COVID-19 Free And Healthy
45
The user is COVID-19 Free And Healthy
46
The user is COVID-19 Negative but suffers from some ailment
47
The user is COVID-19 Negative but suffers from some ailment
48
The user is COVID-19 Free And Healthy
49
The user may be COVID-19 Positive
50
The user is COVID-19 Free And Healthy
51
The user is COVID-19 Free And Healthy
52
The user may be COVID-19 Positive
53
Patient Status Unknown
54
The user is COVID-19 Positive.
55
The user is COVID-19 Negative but suffers from some ailment
56
The user is COVID-19 Negative but suffers from some ailment
57
The user is COVID-19 Positive.
58
The user is COVID-19 Free And Healthy
59
The user is COVID-19 Free And Healthy
60
The user may be COVID-19 Positive
61

The user may be COVID-19 Positive
62
The user is COVID-19 Free And Healthy
63
The user is COVID-19 Free And Healthy
64
The user is COVID-19 Free And Healthy
65
The user is COVID-19 Free And Healthy
66
Patient Status Unknown
67
The user is COVID-19 Free And Healthy
68
The user is COVID-19 Positive.
69
The user may be COVID-19 Positive
70
The user is COVID-19 Negative but suffers from some ailment
71
The user is COVID-19 Free And Healthy
72
The user is COVID-19 Negative but suffers from some ailment
73
Patient Status Unknown
74
The user may be COVID-19 Positive
75
Patient Status Unknown
76
The user is COVID-19 Free And Healthy
77
Patient Status Unknown
78
The user is COVID-19 Negative but suffers from some ailment
79
The user may be COVID-19 Positive
80
The user is COVID-19 Free And Healthy
81
The user may be COVID-19 Positive
82
The user may be COVID-19 Positive
83
The user is COVID-19 Free And Healthy
84
The user is COVID-19 Positive.
85
The user is COVID-19 Negative but suffers from some ailment
86

```
The user is COVID-19 Free And Healthy
## 87
The user may be COVID-19 Positive
## 88
The user is COVID-19 Free And Healthy
## 89
Patient Status Unknown
## 90
Patient Status Unknown
## 91
The user is COVID-19 Negative but suffers from some ailment
## 92
The user is COVID-19 Positive.
## 93
The user is COVID-19 Free And Healthy
## 94
The user is COVID-19 Negative but suffers from some ailment
## 95
The user is COVID-19 Negative but suffers from some ailment
## 96
Patient Status Unknown
## 97
The user may be COVID-19 Positive
## 98
The user may be COVID-19 Positive
## 99
Patient Status Unknown
## 100
The user is COVID-19 Negative but suffers from some ailment
## 101
The user may be COVID-19 Positive
## 102
The user may be COVID-19 Positive
## 103
The user is COVID-19 Free And Healthy
## 104
The user is COVID-19 Negative but suffers from some ailment
## 105
The user is COVID-19 Negative but suffers from some ailment
## 106
Patient Status Unknown
## 107
The user is COVID-19 Negative but suffers from some ailment
## 108
The user is COVID-19 Negative but suffers from some ailment
## 109
The user is COVID-19 Negative but suffers from some ailment
## 110
The user is COVID-19 Negative but suffers from some ailment
## 111
```

The user is COVID-19 Free And Healthy
112
The user is COVID-19 Free And Healthy
113
The user is COVID-19 Free And Healthy
114
The user is COVID-19 Negative but suffers from some ailment
115
The user is COVID-19 Negative but suffers from some ailment
116
The user is COVID-19 Free And Healthy
117
The user is COVID-19 Free And Healthy
118
The user is COVID-19 Free And Healthy
119
The user is COVID-19 Negative but suffers from some ailment
120
The user is COVID-19 Free And Healthy
121
The user may be COVID-19 Positive
122
The user is COVID-19 Free And Healthy
123
The user may be COVID-19 Positive
124
The user is COVID-19 Negative but suffers from some ailment
125
The user is COVID-19 Negative but suffers from some ailment
126
The user is COVID-19 Free And Healthy
127
The user is COVID-19 Free And Healthy
128
The user is COVID-19 Negative but suffers from some ailment
129
The user is COVID-19 Free And Healthy
130
The user is COVID-19 Free And Healthy
131
The user is COVID-19 Negative but suffers from some ailment
132
The user may be COVID-19 Positive
133
The user is COVID-19 Free And Healthy
134
The user is COVID-19 Positive.
135
The user is COVID-19 Negative but suffers from some ailment
136

The user is COVID-19 Free And Healthy
137
The user is COVID-19 Free And Healthy
138
The user is COVID-19 Free And Healthy
139
The user may be COVID-19 Positive
140
The user is COVID-19 Negative but suffers from some ailment
141
The user is COVID-19 Free And Healthy
142
The user is COVID-19 Free And Healthy
143
The user may be COVID-19 Positive
144
The user is COVID-19 Free And Healthy
145
The user is COVID-19 Free And Healthy
146
The user is COVID-19 Negative but suffers from some ailment
147
The user is COVID-19 Free And Healthy
148
The user is COVID-19 Free And Healthy
149
The user is COVID-19 Free And Healthy
150
The user is COVID-19 Free And Healthy
151
The user is COVID-19 Free And Healthy
152
The user may be COVID-19 Positive
153
The user is COVID-19 Free And Healthy
154
The user may be COVID-19 Positive
155
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```r
# A plot of total tests done and their results

library(ggplot2)
library(ggpubr)
```

```
## Warning: package 'ggpubr' was built under R version 4.0.2
```

```r
theme_set(theme_pubr())
ggplot(val12,aes(TestResult)) +
  geom_bar(fill = "#0073C2FF") +
  theme_pubclean()
```
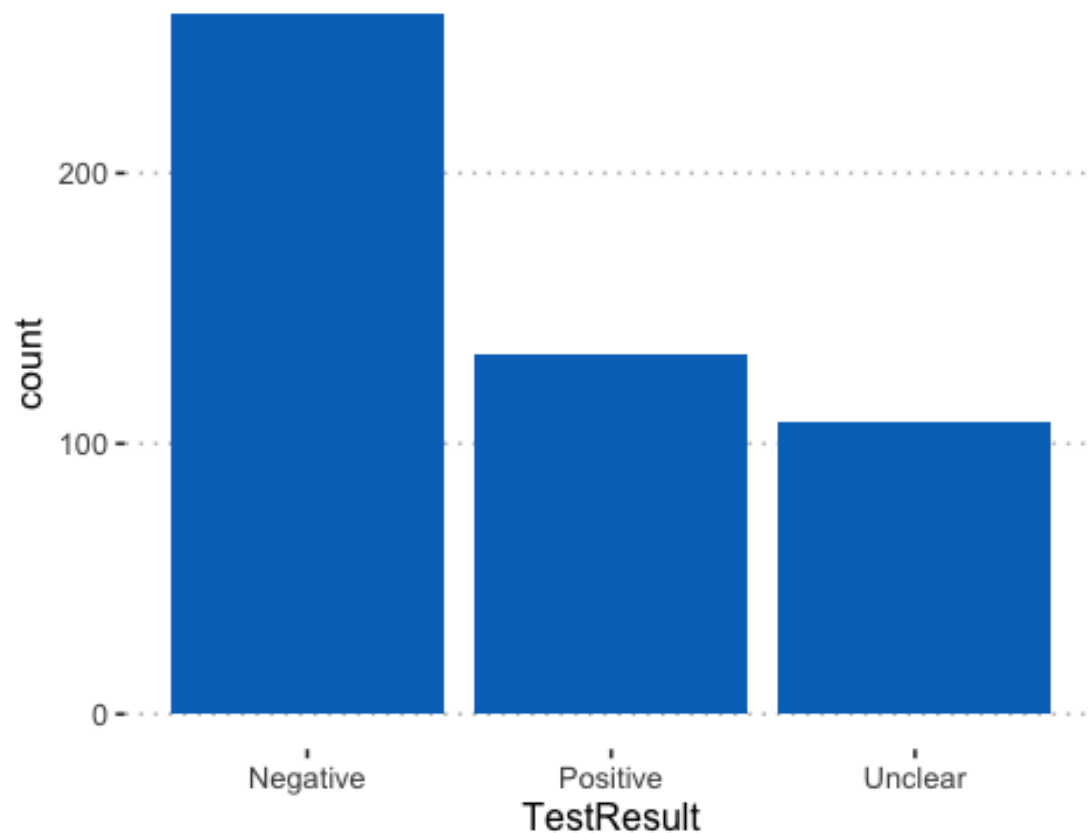
GPS

Plot in R Studio # A plot of COVID-19 positive cases in Boston and Dartmouth location = dbFetch(dbSendQuery(conn,"SELECT p.latitude as Longitude,p.longitude as Latitude FROM place p,AppUser,HealthReportCheck WHERE p.placeid=AppUser.AddressID AND AppUser.UserID=HealthReportCheck.UserID AND HealthReportCheck.TestResult='POSITIVE';")) location library(leaflet) leaflet() %>% addTiles() %>% addMarkers(as.vector(location[1:134,"Latitude"]),as.vector(location[1:134,"Longitude"]), icon = list(iconUrl = 'https://amanbatra.in/static/img3/covid.png', iconSize = c(25, 25)))

```r
# A plot of COVID-19 positive cases in Boston and Dartmouth
location = dbFetch(dbSendQuery(conn,"SELECT p.latitude as Longitude,p.longitude as Latitude FROM place
p,AppUser,HealthReportCheck
WHERE p.placeid=AppUser.AddressID
AND AppUser.UserID=HealthReportCheck.UserID
AND HealthReportCheck.TestResult='POSITIVE';"))

location
```
```

R Console        data.frame
                  133 x 2
```

Longitude <dbl>	Latitude <dbl>
42.33783	−71.03014
42.36614	−71.03027
41.55993	−70.98651
41.54827	−70.99751
41.54494	−70.94545
41.55804	−71.00510
41.56353	−70.93987
42.35751	−71.06910
41.54671	−70.95761
42.34227	−71.08311

1–10 of 133 rows   Previous 1 2 3 4 5 6 … 14 Next

```{r}
library(leaflet)
leaflet() %>%
  addTiles() %>%
  addMarkers(as.vector(location[1:134,"Latitude"]),as.vector(location[1:134,"Longitude"]), icon = list(iconUrl =
'https://amanbatra.in/static/img3/covid.png',
```