**Description of the dataset**

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The archive contains the input used for the simulation experiment and search procedure in Datner, Raviv, Tzur, Chemla (2017) "[Setting Inventory Levels in a Bike Sharing Network](https://doi.org/10.1287/trsc.2017.0790)". There are data about three north American bike-sharing systems namely Capital, Divvy, and Hubway. The data reflect the state of these systems in spring to autumn 2013. For each system two demand processes that reflect the demand in two different seasons is supplied.

Everything is store in Matlab at files (.mat). Note that these files can be read in python using the Scipy library. See <https://docs.scipy.org/doc/scipy/reference/tutorial/io.html> for documentation end examples.

The geography of the systems is given in the files Geography{SystemName}.mat (replace {SystemName} with Capital, Divvy or Hubway)/

Each geography file contains the following Matlab arrays:

**DrrivingTimes, WalkingTimes, RidingTimes** are matrices where the (i,j) element represents the time with the corresponding mean to arrive from station i to station j. The units are half hours.

**C** - A vector that contains the capacity of the stations (number of docking poles)

**CircularWalkingTime, CircularRidingTime** - the average time for a user with the same origin and destination (note that in the matrices the elements on the diagonal are zero.

The file Demand{1|2}{SystemName} contains statistics about demand data for the systems created from transaction data collected in Spring and Summer of 2013. The geography data corresponds to the state of the system in the later of the two demand file of the system. Thus in the first file, some station may see no demand at all.

For the end of representing the demand process in a normal working day, the day was discretized to 48 periods (half an hour each). The demand data is given in terms of events per time unit. Each such file contains the following Matlab variables assuming the number of stations in the system is n.

**ArrivalRate** - a 48 by n matrix where the (t,i) element represents the arrival rate of users who wish to rent a bicycle during period t at station i.

**ReturnRate** - a 48 by n matrix where the (t,i) element represents the arrival rate of users who wish to return a bicycle during period t at station i.

**ArrivalRateOD** - a 48 by n by n matrix. The (t,i,j) elemet represents the arrival rate of users who arrived at station i during period t with the intention of riding to station j.

**Description** - a string variable that contains information about the instance.

**InitialState00ofer** - The optimal initial inventory level of each station when calculating using the method of Raviv and Kolka (2013) "[Optimal Inventory Management of a Bike-Sharing Station](http://dx.doi.org/10.1080/0740817X.2013.770186)" based on the data in ArrivalRate in ReturnRate