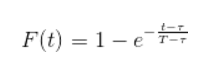
The Set of Time Headway

Time Headway(TH) 是前后相邻两车前端通过同一地点的时间差，通常情况下，时距是一个随机的数值，但当人驾驶汽车时，若前方汽车在极短时间内进行突然的紧急刹车或减速，后车驾驶员在一定反应时间之后才能做出减速应对，所以两车之间的时距需要大于一个最小的安全时距t(safety),这个安全时距应由人实际的反应时间决定。

前后两辆相邻车之间的时距是由司机主观判断决定，但一般来说，当后车离前车较远时，后车会加速行驶，使两车的时距变小，而当后车意识到时距过小，即实际的车头时距小于他心理所预期的安全时距时，他就会减速，使两车车头时距变大。

于是我们首先需要确定所有司机心理主观的车头时距分布，在[Examining headway distribution models with urban freeway loop event data]中，由于在该问题中存在一个最小的车头时距T，我们用移位负指数可以描述司机所预期的车头时距的分布，

设任意车与前车的车头时距为$ t\_{i} $，所有汽车的平均车头时距为$T$，随机变量$t\_{i}$服从移位负指数分布，即F(t)=1-e^{-\frac{t-\tau }{T-\tau}} ; 

其中，平均车头时距$ T $可以由实际数据计算得到

对于每一段路，当某个时刻的车流量$Q(t)$确定时，根据交通流中的关系，车流密度$K=/frac{Q}{V}$，于是平均车距$T=\frac{1}{K}=\frac{V}/{Q}$。

移位负指数随机变量的产生模型：

由于计算机软件只能产生均匀随机分布$u\sim u(a,b)$，为了产生某个随机变量$t$，使$F(t)=1-e^{-\frac{t-\tau}{T-\tau}},t>\tau$我们考虑f(t)的反函数$t=F^{-1}(t)=G(u)=\tau-(T-\tau)\cdot ln(1-u)$;

则随机变量$t>\tau$, 当$t\_{0}>\tau$,

Time Headway (TH) is the time difference between the two adjacent vehicles passing through the same location. In general, the TH is a random value. But when people drive a car, the front car has an emergency brake or deceleration in a very short time, the following car driver can respond only after a certain reaction time. It is easy to cause traffic accidents if the distance between the two cars is two small. So the HT between the two cars needs to be greater than a minimum safety HT. The safety HT is depended on the reaction time of person.

The HT of two vehicles is determined by the subjective judgment of the driver. But generally speaking, when the rear car is far away from the front car, the rear car will speed up and make the HT of two cars smaller. When the driver of rear is aware that the HT is too small，as the HT of reality is less than the HT he expected，the driver will slow down and increase the HT between two cars.