Question 1:   
  
Based on research for the subscriber business model the following metrics keep recurring as important, via best-practices articles, google trends and success stories:  
  
**ARPU** - Average Monthly revenue per user/customer  
**Churn Rate** - the percentage rate at which SaaS customers cancel their recurring revenue subscriptions.  
**MRR** - Monthly Recurring Revenue  
**Subscriber Growth** – Increase in subscribers over time  
**LTV** - Average revenue per customer × Gross margin percentage / Customer churn rate  
**SAC** -Total Spend / Additional Subscribers

(research & evaluation amalgamated in <https://github.com/resilience/HyveMobile-DataTest/blob/master/Word%20Docs/Research%20in%20Metrics%20%26%20Industry%20Success%20Stories.docx> )  
  
From the above metrics I drew the conclusion that

1. We would like to see how our users have increased and decreased

2. We would like to see how those increases have affected our revenue   
3. That the expenditure of the business could not be drawn from the provided data

4. We would like to know our strengths – ie – what provides us the most revenue  
  
By taking into consideration the metrics above, with the considerations below  
- I have built a Tableau Story on:  
 <https://eu-west-1a.online.tableau.com/#/site/hyvemobiledatatest/views/HyveMobileTableauWorkbook/Story1?:iid=1>  
  
The first 3 slides compare subscriber decline and subscriber growth.  
The slides following investigate provider health & service performance to better understand what is happening to our subscribers – which providers and services hold their attention – and thereby generate us revenue.  
The final slides delve into how our pricing impacts subscriber behaviour and if that change in behaviour is affecting Hyvemobile negatively.  
  
Question 2.   
Based on the data received I had to deep dive into the industry to see how metrics are applied – however I wish I had more hands on time with different datasets to fully understand the industry and how the revenue stream works. I did what I could with my understanding of how things fit together.  
  
Thoughts & assumptions:   
I assumed the data was all correct, I am used to working with raw unstructured data but the was the first time I received data already formatted, cleaned etc – that’s why it took me a day to realize that the subscriber\_start & subscriber\_end dates where in fact erroneous and not some new format that I have never seen before.  
I also made the assumption that even if I didn’t understand the industry itself, the data would not need to much processing to get to a usable format – it might still dawn on me that I needed to make more calculations to dig deeper into the data itself.   
Based on the data itself the charge in cents was the concept that eluded me the most as to how to apply it.

Findings are all displayed on the Tableau website above.   
However – it was surprising to me to see so many failed transactions there are   
The only bullet point I feel I didn’t hit was 4.   
I would love to understand the revenue structure of the industry better to reattempt the problem.

Question 3.

(initial workflow timeline for coding & data exploration <https://github.com/resilience/HyveMobile-DataTest/blob/master/Word%20Docs/Timeline.docx>)  
  
I adapted some of my code from a bigger application I wrote that works with Google’s Geolocation and Places API. This application has error handling and performance measuring already incorporated so the biggest change was to switch out the SQLite database for the AWS MySQL RDS. Hosted here: <https://github.com/resilience/HyveMobile-DataTest/blob/master/Data%20Test.py>  
  
I realize that with the extra time I should have focused on building the cell tower aspect to remove repeat calls – but due to outside constraints and my familiarity with Google API I don’t feel like it’s something I had to prove to myself on a time crunch, but I will build & incorporate it after submitting.   
  
I also built a Pandas toolkit that feeds in the transaction.csv file into a local MySQL db for querying – the aim was to do metrics directly from within Python to complement the Tableau Visualizations. However in hindsight it seems unnecessary[. https://github.com/resilience/HyveMobile-DataTest/blob/master/excel%20parser.py](.%20https:/github.com/resilience/HyveMobile-DataTest/blob/master/excel%20parser.py)  
  
I also wrote a quick script to handle any database admin for the AWS RDS server:

<https://github.com/resilience/HyveMobile-DataTest/blob/master/tableActions.py>  
  
Overall, I thought the test was a very interesting mixture of tasks – it definitely overlapped with things that I’ve worked on heavily before – and I feel more comfortable using AWS after incorporating RDS and playing around with Lambda.