# Assumptions and Guidelines

The primary objective of this experiment was to test which parameters should be considered when allocating resources of offers to users of a Data Saivngs Plan

Thus, let’s assume that:

* Qi = Initial Quota that a user receives when entering a Data Savings Plan (DSP)
* t = timeframe in months
* Ot = Number of Offers in period t
* Qt = Total Quota of all participants in the DSP
* Qat = Quota attribution in period t
* O = Total number of offers in which a user participates in period t
* Mt = Total pool of money from offers received in period t
* T = Time in months since the participant has entered the plan
* Nt = Total number of contributions that a user has from all Named Schemas (NS) in a DSP
* PT = Weight of time (T) in the equation
* DIMt = Average DIM score from all NS in the DSP

**Note:** Nt and DIMt are only updated when the user participates (automatically) in an offer where that targets one’s named schema.

Example to explain this note:

User: Jake

Period 1: Jake N1 = 3 and DIM1 = 4

Period 2: There is a new offer an offer for credit card named schema (which the user is eligible). In period 2 when the offer occurs and the user’s data is queried then the new information shows that the user

Example 1

Let’s assume that:

* In jan/2024 the Health Care Data Savings Plan (HCdsp) is launched
* HCdsp only accepts users that are older than 18 years old and residents of São Paulo, Brazil
* HCdsp only accepts buy offers from the following economic segments
  + Pharmaceutical R&D
  + Insurance
  + Food Industry
* HCdsp only accepts offers that are aggregated or anonymous
* For HCdsp every new member receives 100 quotas (Qi = 100)
* In HCdsp payments are distributed to members in the first month of the year
* HCdsp only accepts three named schemas
  + Complete Blood Count (CBC)
  + Cardiac and Cholesterol Testing (CEA)
  + Glucose Level (GL)
* In the first month three eligible users and accepted to join HCdsp

|  |  |  |
| --- | --- | --- |
| **Name** | **Named Schemas** | **Entry Date** |
| John | CBC, CEA, GL | Jan/2024 |
| Anna | CBC, CEA, GL | Jan/2024 |
| Peter | CBC, CEA, GL | Jan/2024 |

* In mar/2024 the plan receives a new offer (Oa) where an insurance company will pay $ 5,000 for 24 months of Cholesterol data contained in the CEA named schema (for more information of this offer see the appendix)
* At the time of offer Oa the following is true about each member
  + John and Peter has done only one Cholesterol Exam (N = 1)
  + Anna has done three Cholesterol Exams in this period (N = 3)

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Named Schema | N | DIM |
| John | CEA | 1 | 3.0 |
| Peter | CEA | 1 | 2.0 |
| Anna | CEA | 3 | 4.0 |

* In the following month 2 more members joined the HCdsp

|  |  |  |
| --- | --- | --- |
| **Name** | **Named Schemas** | **Entry Date** |
| Jessica | CBC, CEA, GL | Apr/2024 |
| Carolina | CBC, CEA | Apr/2024 |

* This same month the plan receives a new buy offer (Qb) where a pharmaceutical company that is developing a new drug for diabetes will pay $ 5,000 for 12 months of Glucose data contained in the GL named schema (for more information of this offer see the appendix)
* At the time of offer Ob the following is true about each member

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Named Schema | N | DIM |
| John | GL | 2 | 2.0 |
| Peter | GL | 2 | 2.5 |
| Anna | GL | 3 | 2.8 |
| Jessica | GL | 3 | 3.0 |

Note that Carolina is not eligible for this offer because she has never done a Glucose Level exam

* In May/2024 the plan receives a third buy offer (Qc) where a food company will pay $ 5,000 for 12 months of blood tests, data contained in the CBC named schema (for more information of this offer see the appendix)
* At the time of offer Ob the following is true about each member

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Named Schema | N | DIM |
| John | CBC | 3 | 2.0 |
| Peter | CBC | 3 | 2.0 |
| Anna | CBC | 3 | 2.0 |
| Jessica | CBC | 3 | 2.0 |
| Carolina | CBC | 3 | 2.0 |

Note that for this offer everyone has done the same amount of exams (3) and received the same DIM score in this Named Schema

* In the following months no new member joined HCdsp and there were no new offers. When the plan completed 12 months the revenue was distributed to each member according to the equation below:
  + t = 12
  + Qa = (((Qi \* T)\*Pt + N12\*DIM12 \*(1-Pt))\*(1+O12))/Qt
  + Mt = 5,000 + 5,000 + 5,000 = 15,000
  + Qt = number of new members x Qi = 5 x 100 = 500
  + Lets assume that the amount of time that a person is in the plan (PT) is only ¼ as relevant as the statistical data of her data information (PT = 25%)
  + John
    - Started like everyone else with 100 quotas (Qi = 100), entered the plan in the first month (T = 12), participated in the three offers (O12 = 3), made 6 total contributions in the offers he participated (N = 1 + 2 +3 = 6) and had an average DIM score of 2.33 (DIM12 = (3+2+2)/3 = 2.33)
    - Qa(John) = (((100 \* 12)\*0.75 + 6\*2.33 \*(1-0.75))\*(1+3))/500 = 7.23
  + Peter
    - Started like everyone else with 100 quotas (Qi = 100), entered the plan in the first month (T = 12), participated in the three offers (O12 = 3), made 6 total contributions in the offers he participated (N = 1 + 2 +3 = 6) and had an average DIM score of 2.17 (DIM12 = (2+2.5+2)/3 = 2.17)
    - Qa(Peter) = (((100 \* 12)\*0.75 + 6\*2.17 \*(1-0.75))\*(1+3))/500 = 7.22
  + Anna
    - Started like everyone else with 100 quotas (Qi = 100), entered the plan in the first month (T = 12), participated in the three offers (O12 = 3), made 9 total contributions in the offers he participated (N = 3 + 3 +3 = 9) and had an average DIM score of 2.93 (DIM12 = (2+2.8+4)/3 = 2.93)
    - Qa(Anna) = (((100 \* 12)\*0.75 + 9\*2.93 \*(1-0.75))\*(1+3))/500 = 7.25
  + Jessica
    - Started like everyone else with 100 quotas (Qi = 100), entered the plan in the fourth month (T = 8), participated in two offers (O12 = 2), made 6 total contributions in the offers he participated (N = 3 + 3 = 6) and had an average DIM score of 2.5 (DIM12 = (2+3)/2 = 2.5)
    - Qa(Jessica) = (((100 \* 12)\*0.75 + 6\*2.5 \*(1-0.75))\*(1+2))/500 = 5.42
  + Carolina
    - Started like everyone else with 100 quotas (Qi = 100), entered the plan in the fourth month (T = 8), participated in one offer (O12 = 1), made 3 total contributions in this single offer (N = 3) and had a DIM score of 2 (DIM12 = 2)
    - Qa(Carolina) = (((100 \* 12)\*0.75 + 3\*2 \*(1-0.75))\*(1+1))/500 = 3.6
  + Therefore ToTQa12 = 7.23 + 7.22 + 7.25 + 5.42 + 3.6 = 30.72 and the amount that each participant should receive is given by M\*( Qa/ToTQa12):
    - John = 15,000 x (7.23/30.72) = $3,530.27
    - Peter = 15,000 x (7.22/30.72) = $3,525.39
    - Anna = 15,000 x (7.25/30.72) = $3,540.04
    - Jessica = 15,000 x (5.42/30.72) = $2,646.48
    - Carolina = 15,000 x (3.6/30.72) = $1.757,81

This was only one example of a simple scenario to explain how the proceedings of offers are distributed among members of a plan in a given timeframe. To analyze the best method of revenue distribution, more than 60 different configurations of members, entry dates, DIM scores, contributions, offers and quota formulas were tested.