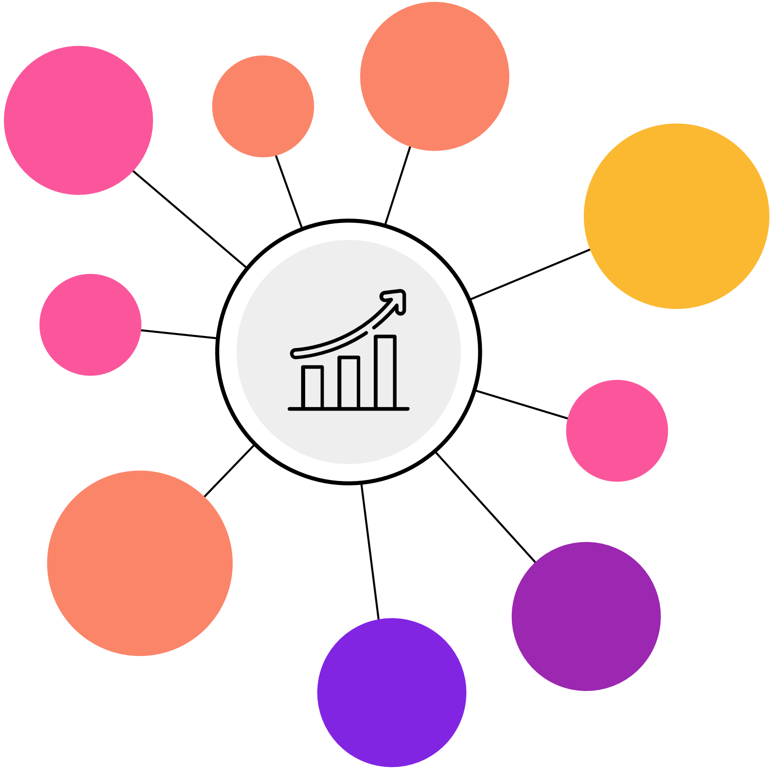


Game Analytics: Delivery 1

María Calle, Irene Hernandez, Paula Hitz and Núria Lamonja

Click here to access our github

The Process

Gather

Collect Data

Gathering the data from the simulator

UNITY

Store

Create Databases

Storing the relevant data into tables

PHP

Model & Visualize

Analyze & Plot

Extracting KPIs and represent info

SQL & R

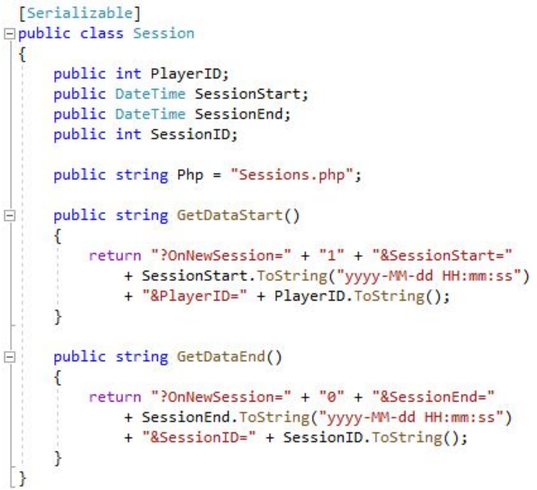
Conclusions

Report

Getting conclusions

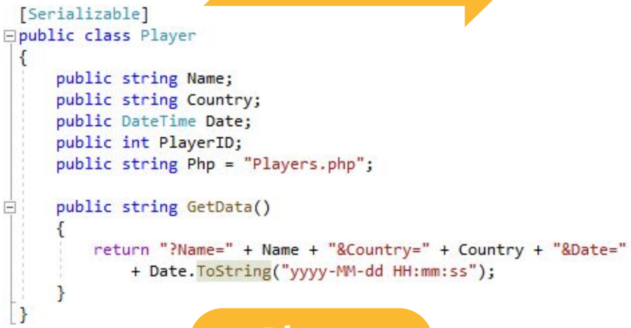
unity

Gather



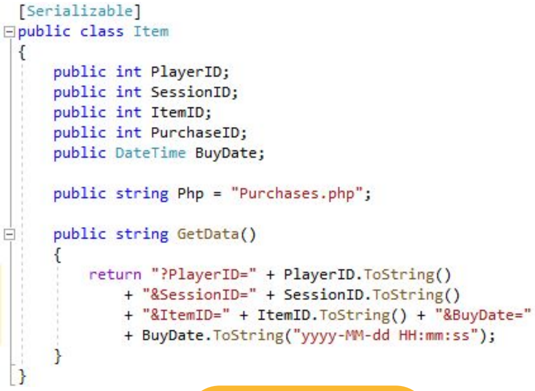
```
[Serializable]
public class Session
{
    public int PlayerID;
    public DateTime SessionStart;
    public DateTime SessionEnd;
    public int SessionID;

    public string Php = "Sessions.php";

    public string GetDataStart()
    {
        return "?OnNewSession=" + "1" + "&SessionStart="
            + SessionStart.ToString("yyyy-MM-dd HH:mm:ss")
            + "&PlayerID=" + PlayerID.ToString();
    }

    public string GetDataEnd()
    {
        return "?OnNewSession=" + "0" + "&SessionEnd="
            + SessionEnd.ToString("yyyy-MM-dd HH:mm:ss")
            + "&SessionID=" + SessionID.ToString();
    }
}
```

Sessions



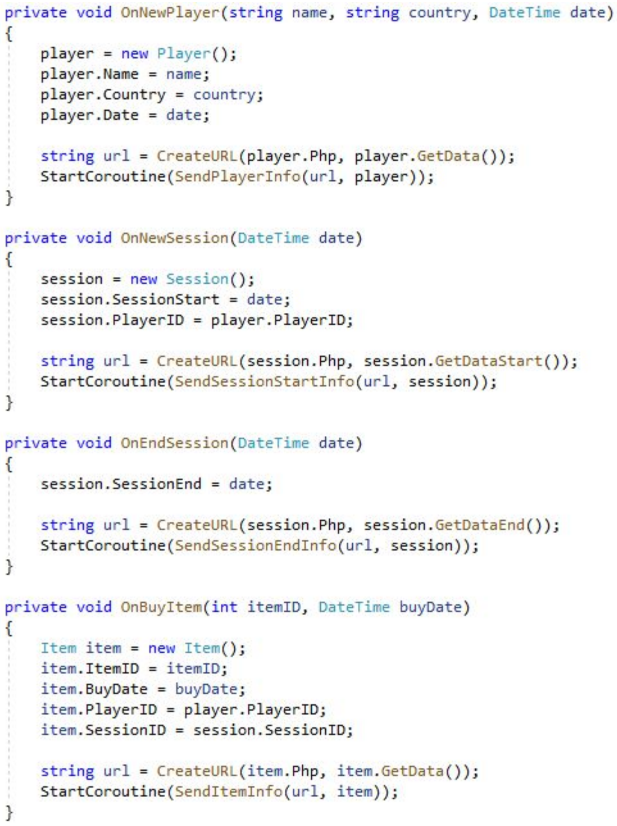
```
[Serializable]
public class Player
{
    public string Name;
    public string Country;
    public DateTime Date;
    public int PlayerID;
    public string Php = "Players.php";

    public string GetData()
    {
        return "?Name=" + Name + "&Country=" + Country + "&Date="
            + Date.ToString("yyyy-MM-dd HH:mm:ss");
    }
}
```

Players



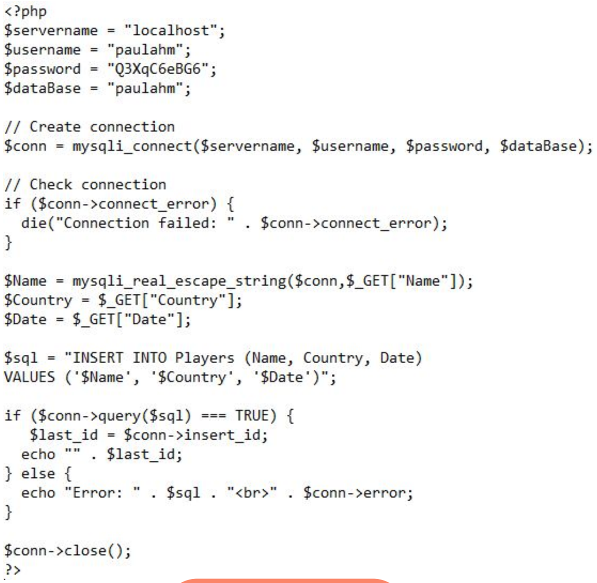
```
[Serializable]
public class Item
{
    public int PlayerID;
    public int SessionID;
    public int ItemID;
    public int PurchaseID;
    public DateTime BuyDate;

    public string Php = "Purchases.php";

    public string GetData()
    {
        return "?PlayerID=" + PlayerID.ToString()
            + "&SessionID=" + SessionID.ToString()
            + "&ItemID=" + ItemID.ToString() + "&BuyDate="
            + BuyDate.ToString("yyyy-MM-dd HH:mm:ss");
    }
}
```

Items



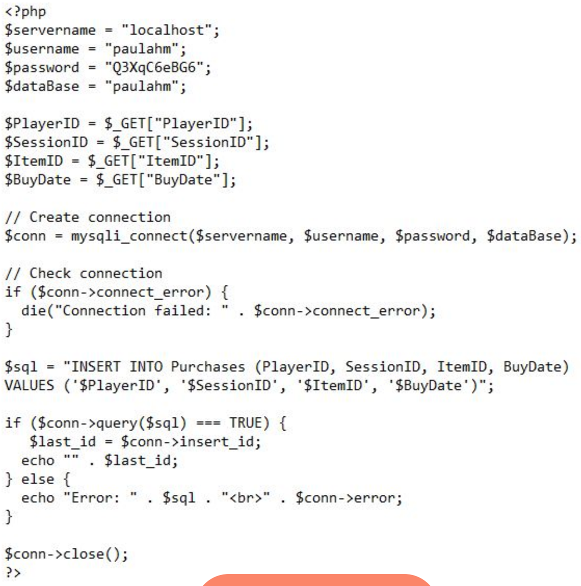
```
private void OnNewPlayer(string name, string country, DateTime date)
{
    player = new Player();
    player.Name = name;
    player.Country = country;
    player.Date = date;

    string url = CreateURL(player.Php, player.GetData());
    StartCoroutine(SendPlayerInfo(url, player));
}

private void OnNewSession(DateTime date)
{
    session = new Session();
    session.SessionStart = date;
    session.PlayerID = player.PlayerID;

    string url = CreateURL(session.Php, session.GetDataStart());
    StartCoroutine(SendSessionStartInfo(url, session));
}

private void OnEndSession(DateTime date)
{
    session.SessionEnd = date;

    string url = CreateURL(session.Php, session.GetDataEnd());
    StartCoroutine(SendSessionEndInfo(url, session));
}

private void OnBuyItem(int itemID, DateTime buyDate)
{
    Item item = new Item();
    item.ItemID = itemID;
    item.BuyDate = buyDate;
    item.PlayerID = player.PlayerID;
    item.SessionID = session.SessionID;

    string url = CreateURL(item.Php, item.GetData());
    StartCoroutine(SendItemInfo(url, item));
}
```

Store



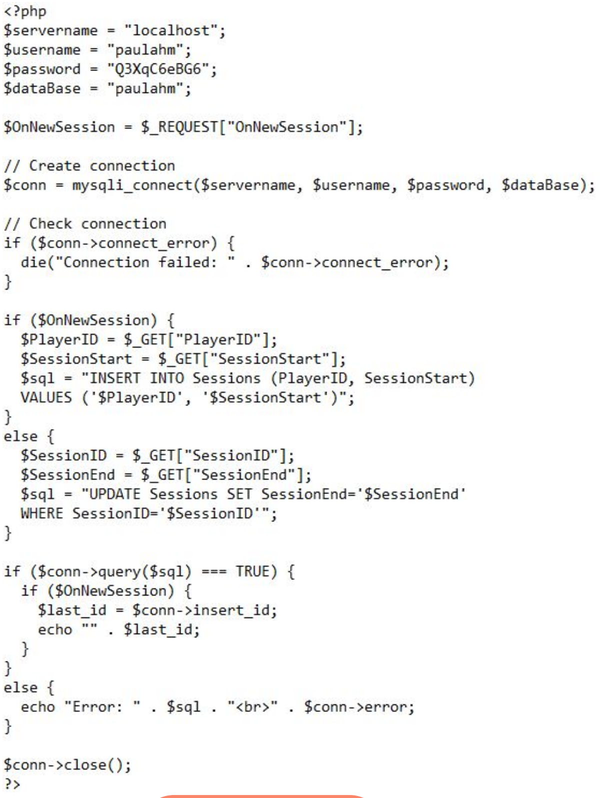
```
<?php
$servername = "localhost";
$username = "paulahm";
$password = "Q3XqC6eBG6";
$dataBase = "paulahm";

// Create connection
$conn = mysqli_connect($servername, $username, $password, $dataBase);

// Check connection
if ($conn->connect_error) {
  die("Connection failed: " . $conn->connect_error);
}

$Name = mysqli_real_escape_string($conn,$_GET["Name"]);
$Country = $_GET["Country"];
$Date = $_GET["Date"];

$sql = "INSERT INTO Players (Name, Country, Date)
VALUES ('$Name', '$Country', '$Date')";

if ($conn->query($sql) === TRUE) {
   $last_id = $conn->insert_id;
  echo "" . $last_id;
} else {
  echo "Error: " . $sql . "<br>" . $conn->error;
}

$conn->close();
?>
```

Players



```
<?php
$servername = "localhost";
$username = "paulahm";
$password = "Q3XqC6eBG6";
$dataBase = "paulahm";

$PlayerID = $_GET["PlayerID"];
$SessionID = $_GET["SessionID"];
$ItemID = $_GET["ItemID"];
$BuyDate = $_GET["BuyDate"];

// Create connection
$conn = mysqli_connect($servername, $username, $password, $dataBase);

// Check connection
if ($conn->connect_error) {
  die("Connection failed: " . $conn->connect_error);
}

$sql = "INSERT INTO Purchases (PlayerID, SessionID, ItemID, BuyDate)
VALUES ('$PlayerID', '$SessionID', '$ItemID', '$BuyDate')";

if ($conn->query($sql) === TRUE) {
   $last_id = $conn->insert_id;
  echo "" . $last_id;
} else {
  echo "Error: " . $sql . "<br>" . $conn->error;
}

$conn->close();
?>
```

Purchases



```
<?php
$servername = "localhost";
$username = "paulahm";
$password = "Q3XqC6eBG6";
$dataBase = "paulahm";

$OnNewSession = $_REQUEST["OnNewSession"];

// Create connection
$conn = mysqli_connect($servername, $username, $password, $dataBase);

// Check connection
if ($conn->connect_error) {
  die("Connection failed: " . $conn->connect_error);
}

if ($OnNewSession) {
  $PlayerID = $_GET["PlayerID"];
  $SessionStart = $_GET["SessionStart"];
  $sql = "INSERT INTO Sessions (PlayerID, SessionStart)
  VALUES ('$PlayerID', '$SessionStart')";
}
else {
  $SessionID = $_GET["SessionID"];
  $SessionEnd = $_GET["SessionEnd"];
  $sql = "UPDATE Sessions SET SessionEnd='$SessionEnd'
  WHERE SessionID='$SessionID'";
}

if ($conn->query($sql) === TRUE) {
  if ($OnNewSession) {
    $last_id = $conn->insert_id;
    echo "" . $last_id;
  }
}
else {
  echo "Error: " . $sql . "<br>" . $conn->error;
}

$conn->close();
?>
```

Sessions

MySQL

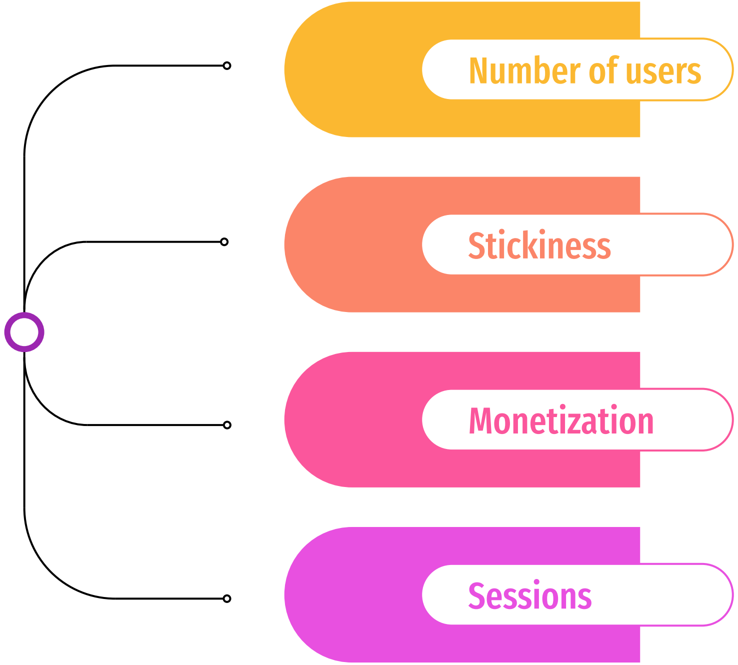
Model & Visualize

R

KPI

Key performance indicator is a type of performance measurement.

KPIs evaluate the success of an organization or of a particular activity in which it engages.



Number of users

DAU, MAU

Stickiness

Stickiness, D1, D3, D7

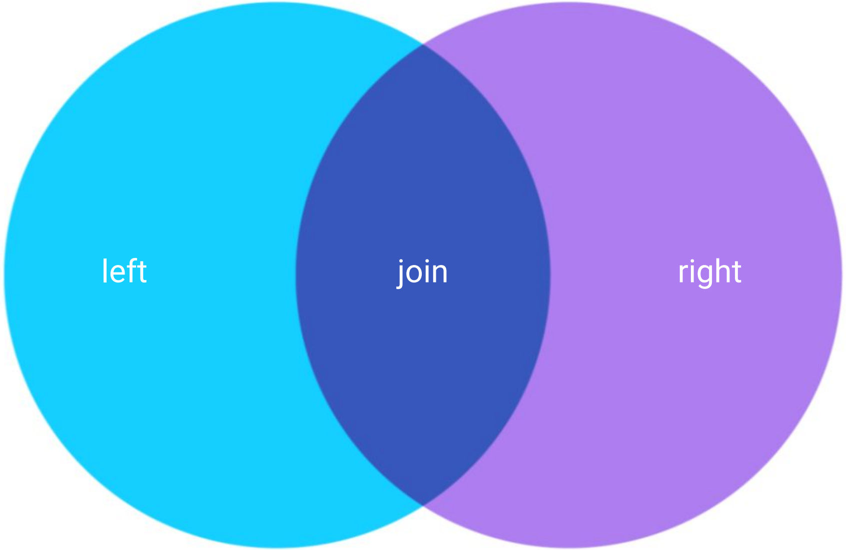
Monetization

ARPU, ARPPU

Sessions

Nº, length

Model & Visualize

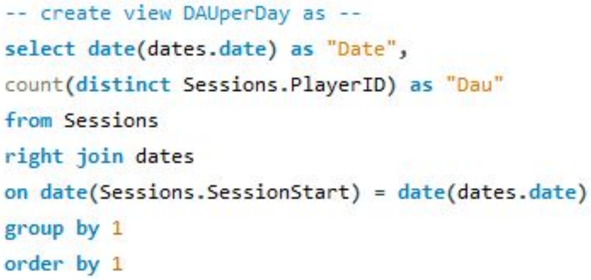


MySQL®

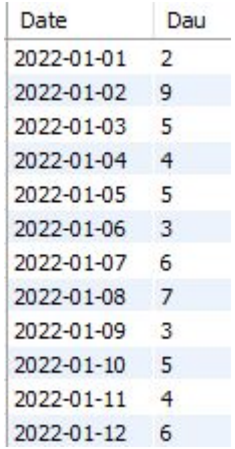
Model & Visualize

Number of users

DAU

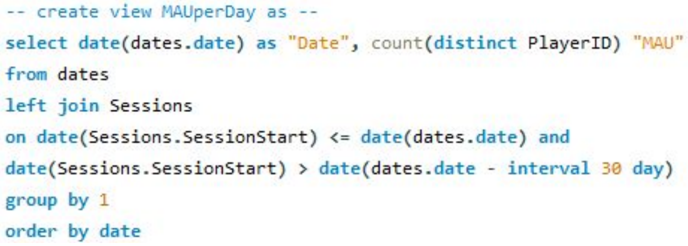


```
-- create view DAUperDay as --
select date(dates.date) as "Date",
count(distinct Sessions.PlayerID) as "Dau"
from Sessions
right join dates
on date(Sessions.SessionStart) = date(dates.date)
group by 1
order by 1
```

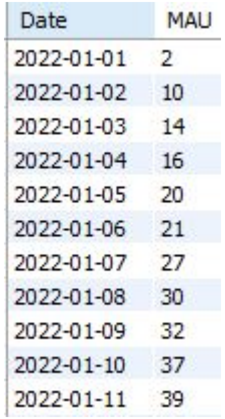


Date	Dau
2022-01-01	2
2022-01-02	9
2022-01-03	5
2022-01-04	4
2022-01-05	5
2022-01-06	3
2022-01-07	6
2022-01-08	7
2022-01-09	3
2022-01-10	5
2022-01-11	4
2022-01-12	6

MAU



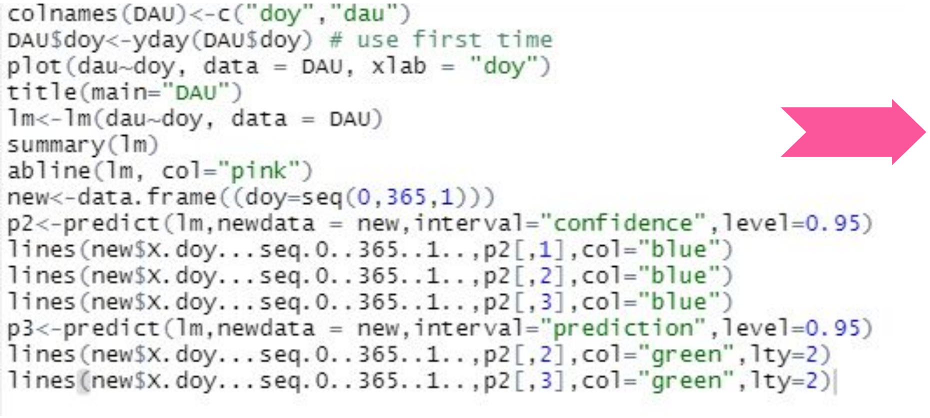
```
-- create view MAUperDay as --
select date(dates.date) as "Date", count(distinct PlayerID) "MAU"
from dates
left join Sessions
on date(Sessions.SessionStart) <= date(dates.date) and
date(Sessions.SessionStart) > date(dates.date - interval 30 day)
group by 1
order by date
```



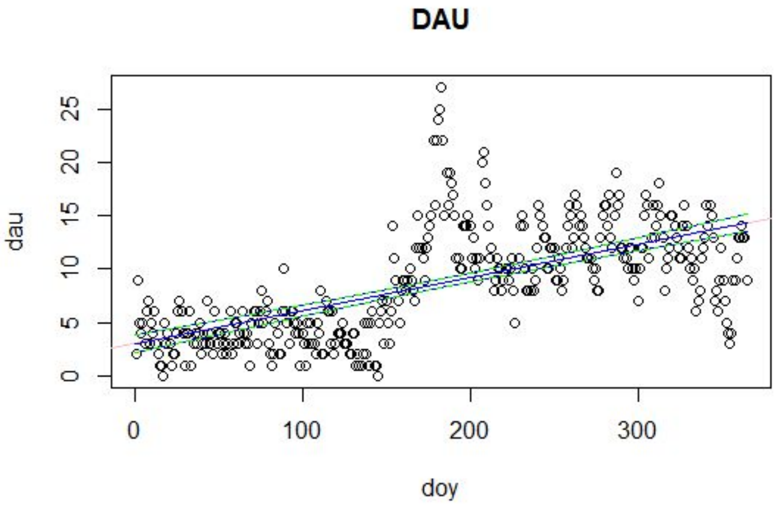
Date	MAU
2022-01-01	2
2022-01-02	10
2022-01-03	14
2022-01-04	16
2022-01-05	20
2022-01-06	21
2022-01-07	27
2022-01-08	30
2022-01-09	32
2022-01-10	37
2022-01-11	39

Model & Visualize

Plotting Data

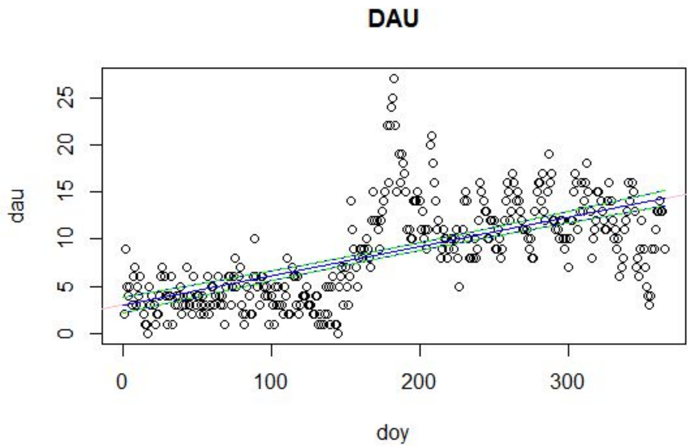


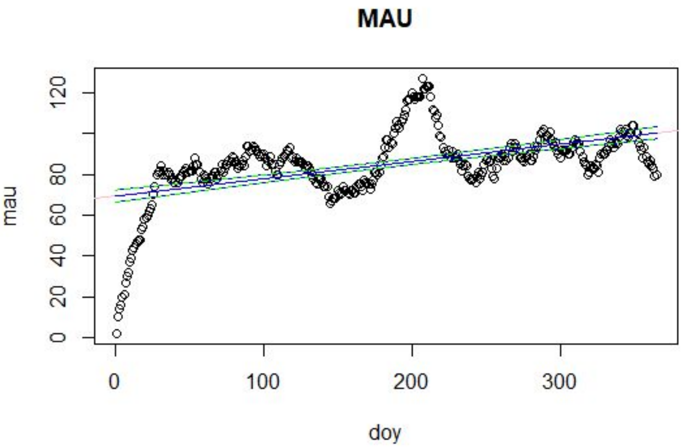
```
colnames(DAU)<-c("doy","dau")
DAU$doy<-yday(DAU$doy) # use first time
plot(dau~doy, data = DAU, xlab = "doy")
title(main="DAU")
lm<-lm(dau~doy, data = DAU)
summary(lm)
abline(lm, col="pink")
new<-data.frame((doy=seq(0,365,1)))
p2<-predict(lm,newdata = new,interval="confidence",level=0.95)
lines(new$X.doy...seq.0..365..1..,p2[,1],col="blue")
lines(new$X.doy...seq.0..365..1..,p2[,2],col="blue")
lines(new$X.doy...seq.0..365..1..,p2[,3],col="blue")
p3<-predict(lm,newdata = new,interval="prediction",level=0.95)
lines(new$X.doy...seq.0..365..1..,p2[,2],col="green",lty=2)
lines(new$X.doy...seq.0..365..1..,p2[,3],col="green",lty=2)
```



Model & Visualize

Number of users





Trends

- Growing Tendency
- Middle-Year Peak

Prediction

- Steady growth
- Recurring Events

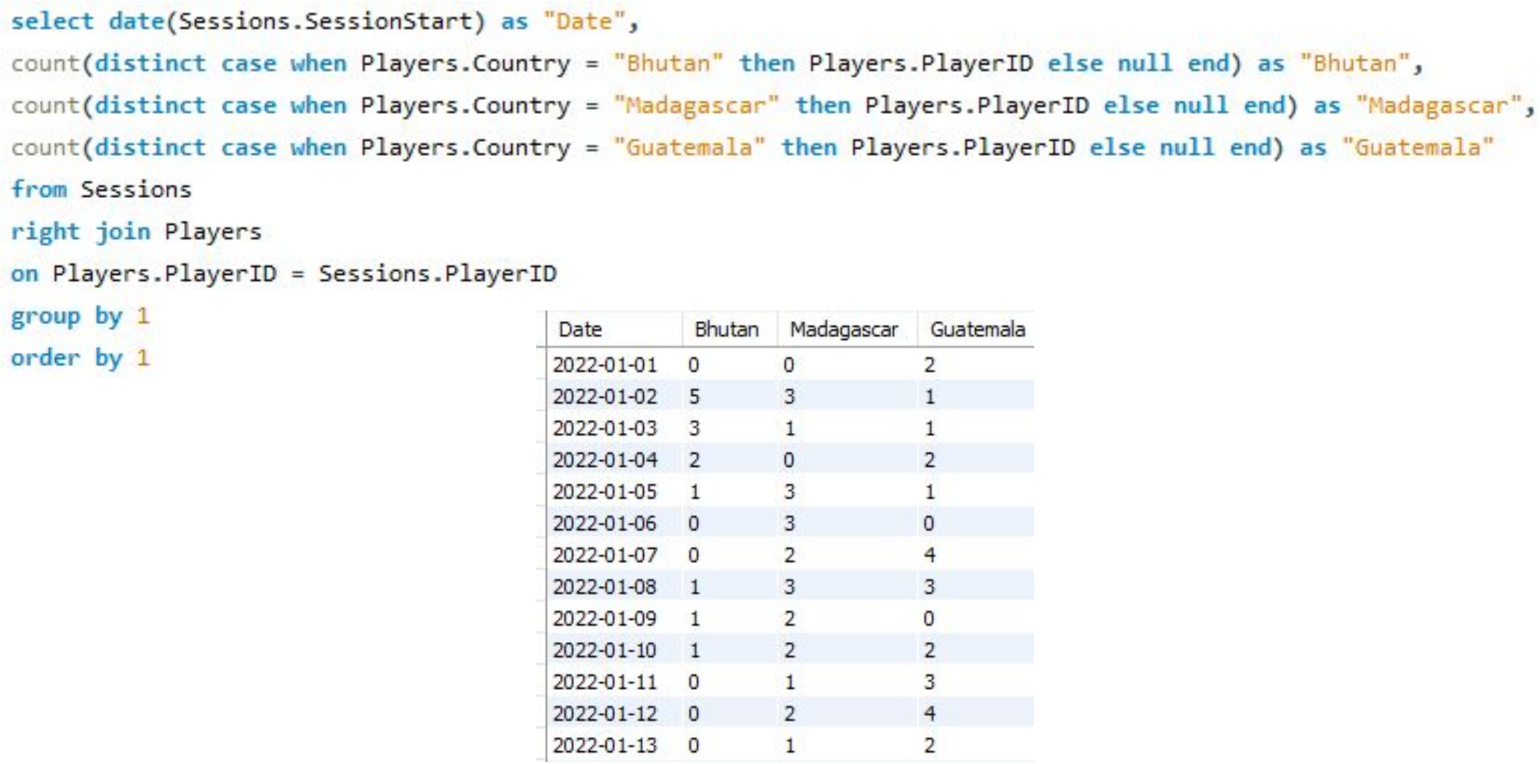
Confidence

- Average-Low

Model & Visualize

Number of users

DAU by Country

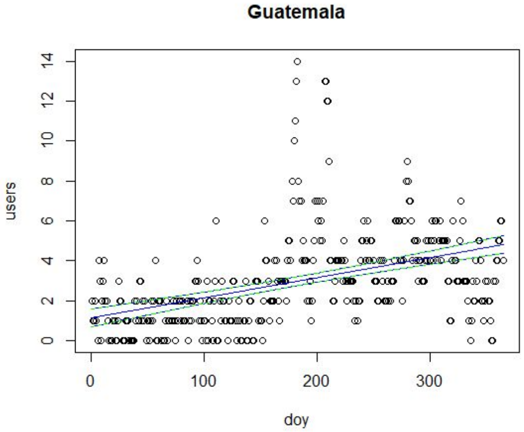


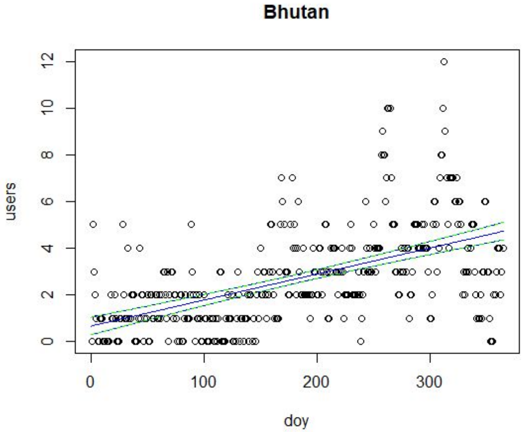
```
select date(Sessions.SessionStart) as "Date",
count(distinct case when Players.Country = "Bhutan" then Players.PlayerID else null end) as "Bhutan",
count(distinct case when Players.Country = "Madagascar" then Players.PlayerID else null end) as "Madagascar",
count(distinct case when Players.Country = "Guatemala" then Players.PlayerID else null end) as "Guatemala"
from Sessions
right join Players
on Players.PlayerID = Sessions.PlayerID
group by 1
order by 1
```

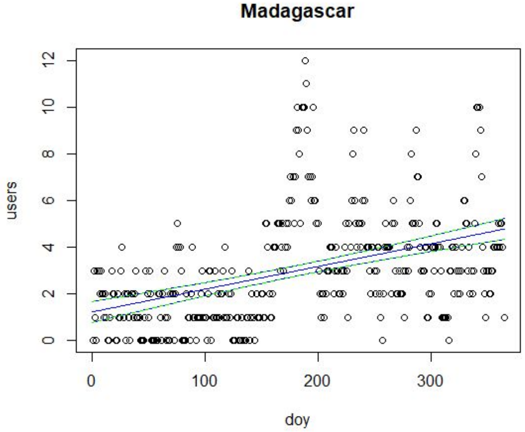
Date	Bhutan	Madagascar	Guatemala
2022-01-01	0	0	2
2022-01-02	5	3	1
2022-01-03	3	1	1
2022-01-04	2	0	2
2022-01-05	1	3	1
2022-01-06	0	3	0
2022-01-07	0	2	4
2022-01-08	1	3	3
2022-01-09	1	2	0
2022-01-10	1	2	2
2022-01-11	0	1	3
2022-01-12	0	2	4
2022-01-13	0	1	2

Model & Visualize

Number of users


Guatemala


Bhutan


Madagascar

Trends

- Growing Tendency
- Peaks

Prediction

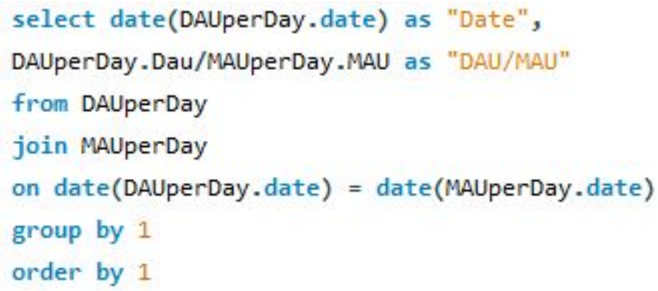
- Steady but more unpredictable growth

Confidence

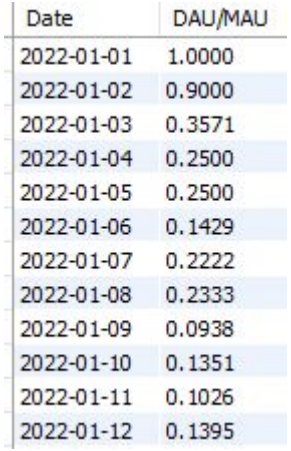
- Low

Model & Visualize

Stickiness

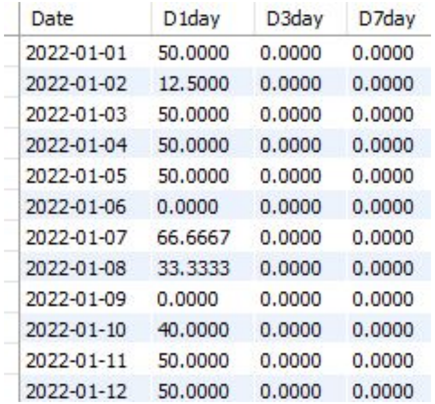


```
select date(DAUperDay.date) as "Date",
DAUperDay.Dau/MAUperDay.MAU as "DAU/MAU"
from DAUperDay
join MAUperDay
on date(DAUperDay.date) = date(MAUperDay.date)
group by 1
order by 1
```



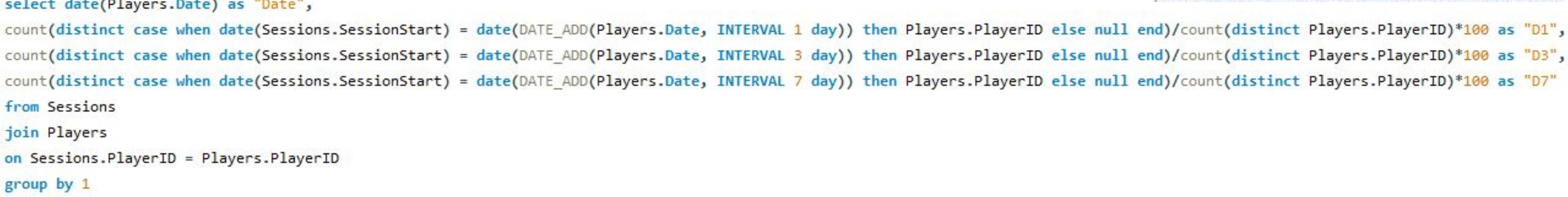
Date	DAU/MAU
2022-01-01	1.0000
2022-01-02	0.9000
2022-01-03	0.3571
2022-01-04	0.2500
2022-01-05	0.2500
2022-01-06	0.1429
2022-01-07	0.2222
2022-01-08	0.2333
2022-01-09	0.0938
2022-01-10	0.1351
2022-01-11	0.1026
2022-01-12	0.1395

Retention



Date	D1day	D3day	D7day
2022-01-01	50.0000	0.0000	0.0000
2022-01-02	12.5000	0.0000	0.0000
2022-01-03	50.0000	0.0000	0.0000
2022-01-04	50.0000	0.0000	0.0000
2022-01-05	50.0000	0.0000	0.0000
2022-01-06	0.0000	0.0000	0.0000
2022-01-07	66.6667	0.0000	0.0000
2022-01-08	33.3333	0.0000	0.0000
2022-01-09	0.0000	0.0000	0.0000
2022-01-10	40.0000	0.0000	0.0000
2022-01-11	50.0000	0.0000	0.0000
2022-01-12	50.0000	0.0000	0.0000

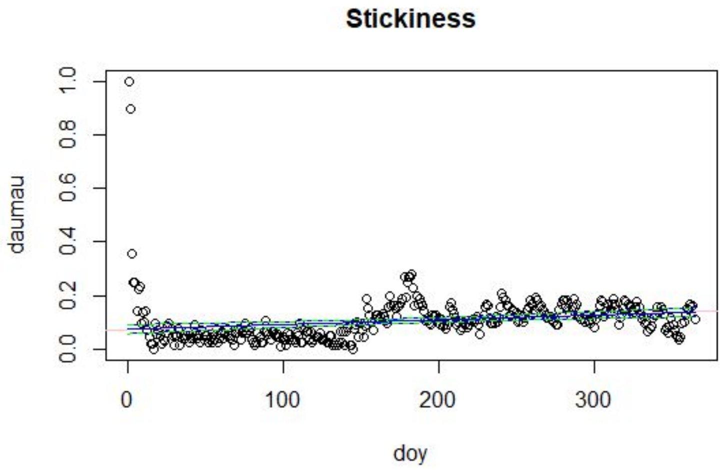
D1, D3, D7



```
select date(Players.Date) as "Date",
count(distinct case when date(Sessions.SessionStart) = date(DATE_ADD(Players.Date, INTERVAL 1 day)) then Players.PlayerID else null end)/count(distinct Players.PlayerID)*100 as "D1",
count(distinct case when date(Sessions.SessionStart) = date(DATE_ADD(Players.Date, INTERVAL 3 day)) then Players.PlayerID else null end)/count(distinct Players.PlayerID)*100 as "D3",
count(distinct case when date(Sessions.SessionStart) = date(DATE_ADD(Players.Date, INTERVAL 7 day)) then Players.PlayerID else null end)/count(distinct Players.PlayerID)*100 as "D7"
from Sessions
join Players
on Sessions.PlayerID = Players.PlayerID
group by 1
```

Model & Visualize

Retention



Trends

- Slow Growth
- Positive influence after event

Prediction

- Events importance

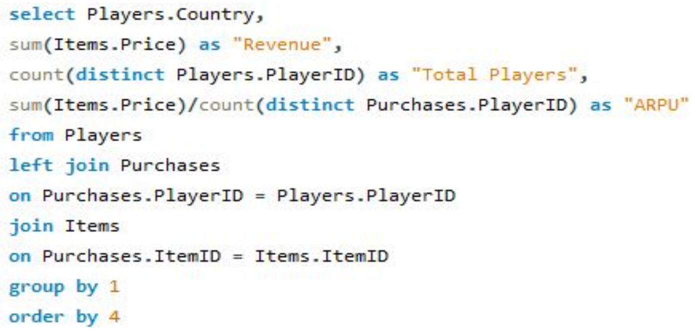
Confidence

- High

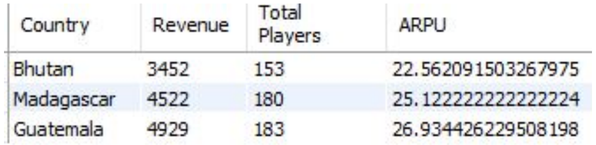
Model & Visualize

Monetization

ARPU

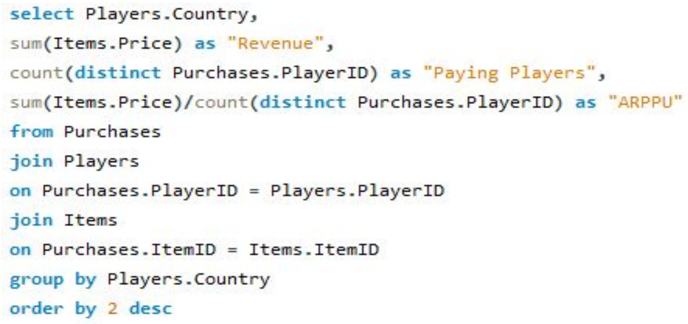


```
select Players.Country,
sum(Items.Price) as "Revenue",
count(distinct Players.PlayerID) as "Total Players",
sum(Items.Price)/count(distinct Purchases.PlayerID) as "ARPU"
from Players
left join Purchases
on Purchases.PlayerID = Players.PlayerID
join Items
on Purchases.ItemID = Items.ItemID
group by 1
order by 4
```

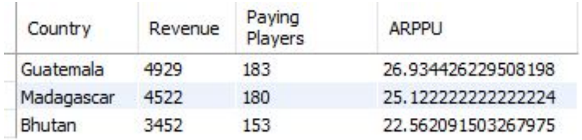


Country	Revenue	Total Players	ARPU
Bhutan	3452	153	22.562091503267975
Madagascar	4522	180	25.122222222222224
Guatemala	4929	183	26.934426229508198

ARPPU



```
select Players.Country,
sum(Items.Price) as "Revenue",
count(distinct Purchases.PlayerID) as "Paying Players",
sum(Items.Price)/count(distinct Purchases.PlayerID) as "ARPPU"
from Purchases
join Players
on Purchases.PlayerID = Players.PlayerID
join Items
on Purchases.ItemID = Items.ItemID
group by Players.Country
order by 2 desc
```

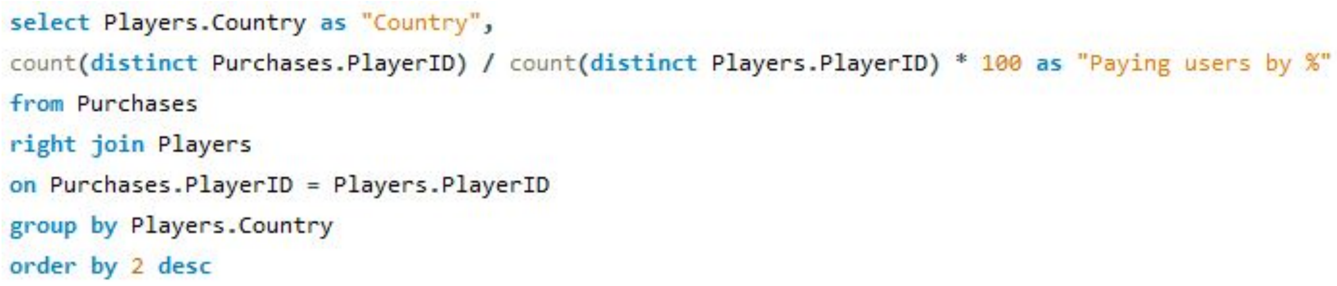


Country	Revenue	Paying Players	ARPPU
Guatemala	4929	183	26.934426229508198
Madagascar	4522	180	25.122222222222224
Bhutan	3452	153	22.562091503267975

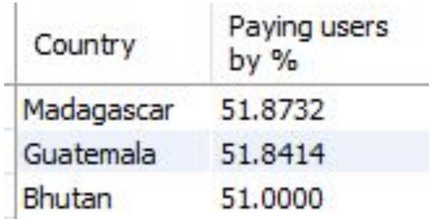
Model & Visualize

Monetization

Paying Users by Percentage

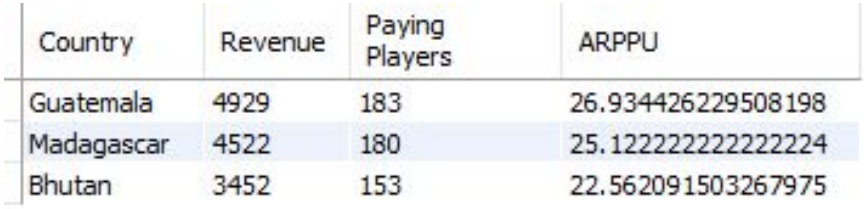


```
select Players.Country as "Country",
count(distinct Purchases.PlayerID) / count(distinct Players.PlayerID) * 100 as "Paying users by %"
from Purchases
right join Players
on Purchases.PlayerID = Players.PlayerID
group by Players.Country
order by 2 desc
```



Country	Paying users by %
Madagascar	51.8732
Guatemala	51.8414
Bhutan	51.0000

Paying Users by Percentage



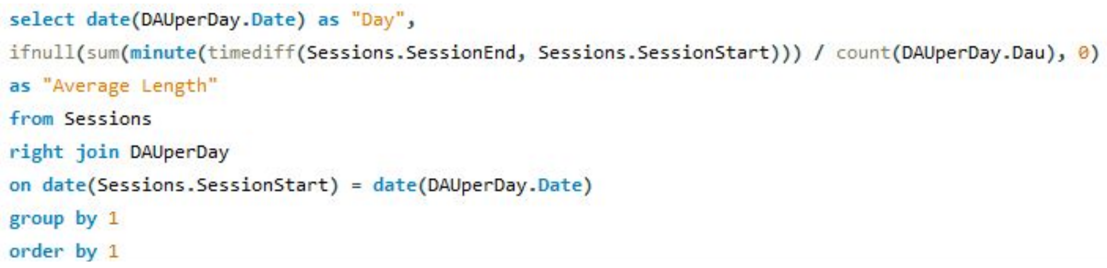
Country	Revenue	Paying Players	ARPPU
Guatemala	4929	183	26.934426229508198
Madagascar	4522	180	25.122222222222224
Bhutan	3452	153	22.562091503267975

ARPPU

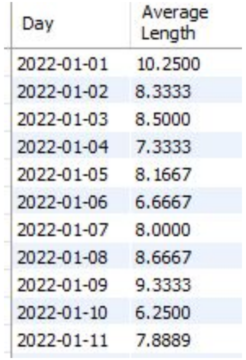
Model & Visualize

Sessions

Average Length Per Session

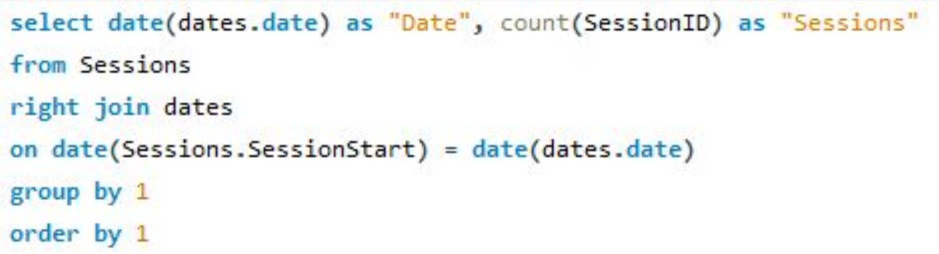


```
select date(DAUperDay.Date) as "Day",
ifnull(sum(minute(timediff(Sessions.SessionEnd, Sessions.SessionStart))) / count(DAUperDay.Dau), 0)
as "Average Length"
from Sessions
right join DAUperDay
on date(Sessions.SessionStart) = date(DAUperDay.Date)
group by 1
order by 1
```

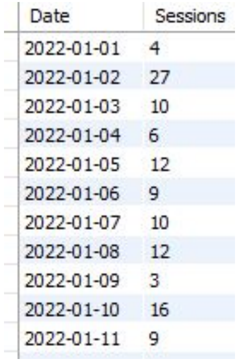


Day	Average Length
2022-01-01	10.2500
2022-01-02	8.3333
2022-01-03	8.5000
2022-01-04	7.3333
2022-01-05	8.1667
2022-01-06	6.6667
2022-01-07	8.0000
2022-01-08	8.6667
2022-01-09	9.3333
2022-01-10	6.2500
2022-01-11	7.8889

Sessions Per Day

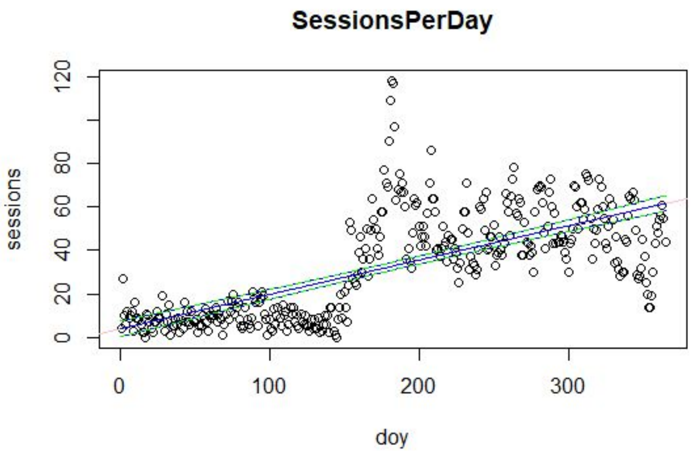


```
select date(dates.date) as "Date", count(SessionID) as "Sessions"
from Sessions
right join dates
on date(Sessions.SessionStart) = date(dates.date)
group by 1
order by 1
```



Date	Sessions
2022-01-01	4
2022-01-02	27
2022-01-03	10
2022-01-04	6
2022-01-05	12
2022-01-06	9
2022-01-07	10
2022-01-08	12
2022-01-09	3
2022-01-10	16
2022-01-11	9

Model & Visualize



Sessions

Trends

- Growth depending on event
- Middle-Year Peak
- Descending trend after event

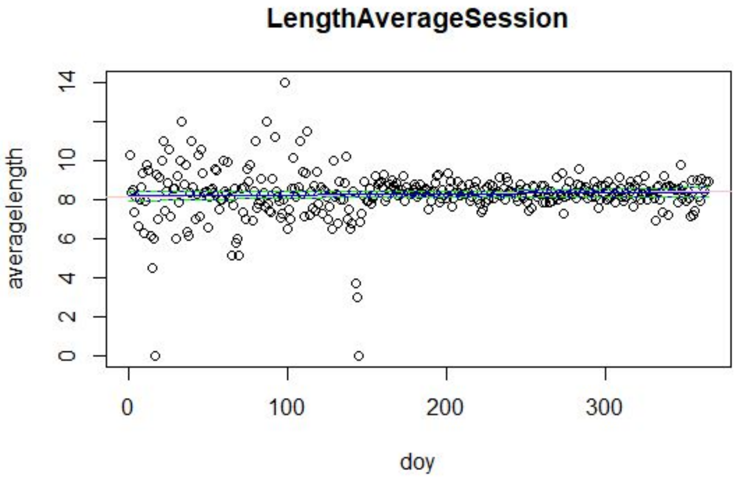
Prediction

- Steady but dangerous growth
- Recurring Events

Confidence

- High then Average-Low

Model & Visualize



Sessions

Trends

- Erratic start
- Design change

Prediction

- No changes needed
- Other necessities?

Confidence

- High then Average-Low

Conclusions

Activity

Increase trend but very dependent on event

Paying users

No significant differences between countries

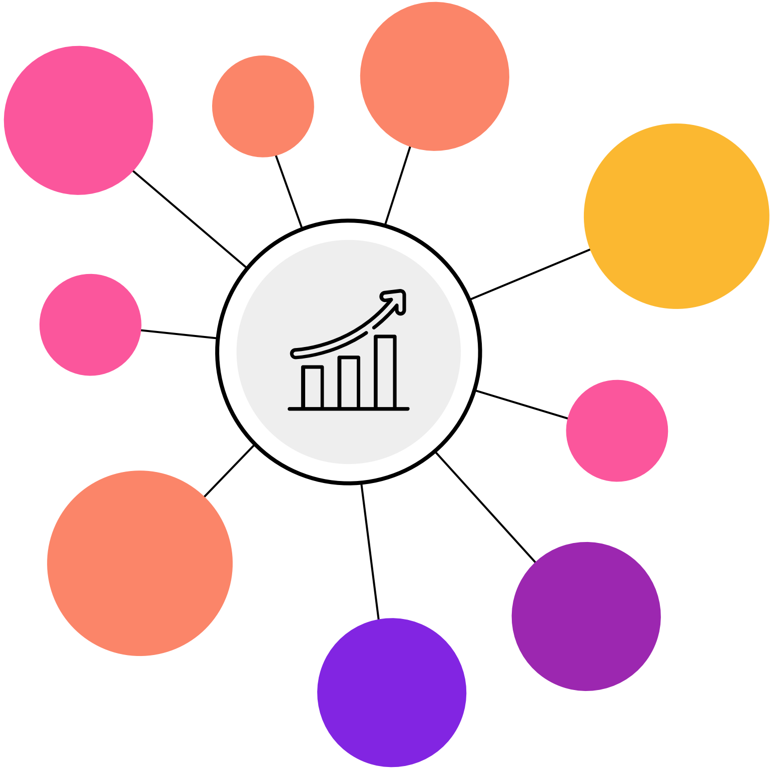
Retention

Small and no relevant changes overtime

Engagement

Steady and dependent on game design

Thank you!



Php: paulahm