Ovechkin Shooting Tendencies

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Data

Data was obtained from Martin Ellis's Kaggle page https://www.kaggle.com/martinellis/nhl-game-data

Prepare the environment

We will use the tidyverse package for quick manipulation and plotting

```
library(tidyverse)
```

```
## -- Attaching packages --------------------------------------- tidyverse 1.3.1 --

## v ggplot2 3.3.5     v purrr   0.3.4
## v tibble  3.1.4     v dplyr   1.0.7
## v tidyr   1.1.4     v stringr 1.4.0
## v readr   2.0.2     v forcats 0.5.1

## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
game_plays <- read.csv("C:\\Users\\Wes\\Downloads\\NHL Game Data\\game_plays.csv")
game_plays_players <- read.csv("C:\\Users\\Wes\\Downloads\\NHL Game Data\\game_plays_players.csv")
player_info <- read.csv("C:\\Users\\Wes\\Downloads\\NHL Game Data\\player_info.csv")
```

Filter and Merge Sought After Data

For this particular analysis we are looking at only the shots on net by Ovechkin within the dataset

```
player_info %>%
  filter(lastName == "Ovechkin")
```

```
##   player_id firstName lastName nationality birthCity primaryPosition
## 1   8471214      Alex Ovechkin         RUS    Moscow              LW
##            birthDate birthStateProvince height height_cm weight shootsCatches
## 1 1985-09-17 01:00:00              <NA>  6' 3"     190.5    235             R
```

```
ovechkin_shots <- game_plays_players %>%
  filter(player_id == "8471214") %>%
  filter(playerType == "Shooter" | playerType==  "Scorer")

ovechkin_shots <- ovechkin_shots %>%
  inner_join(game_plays)
```

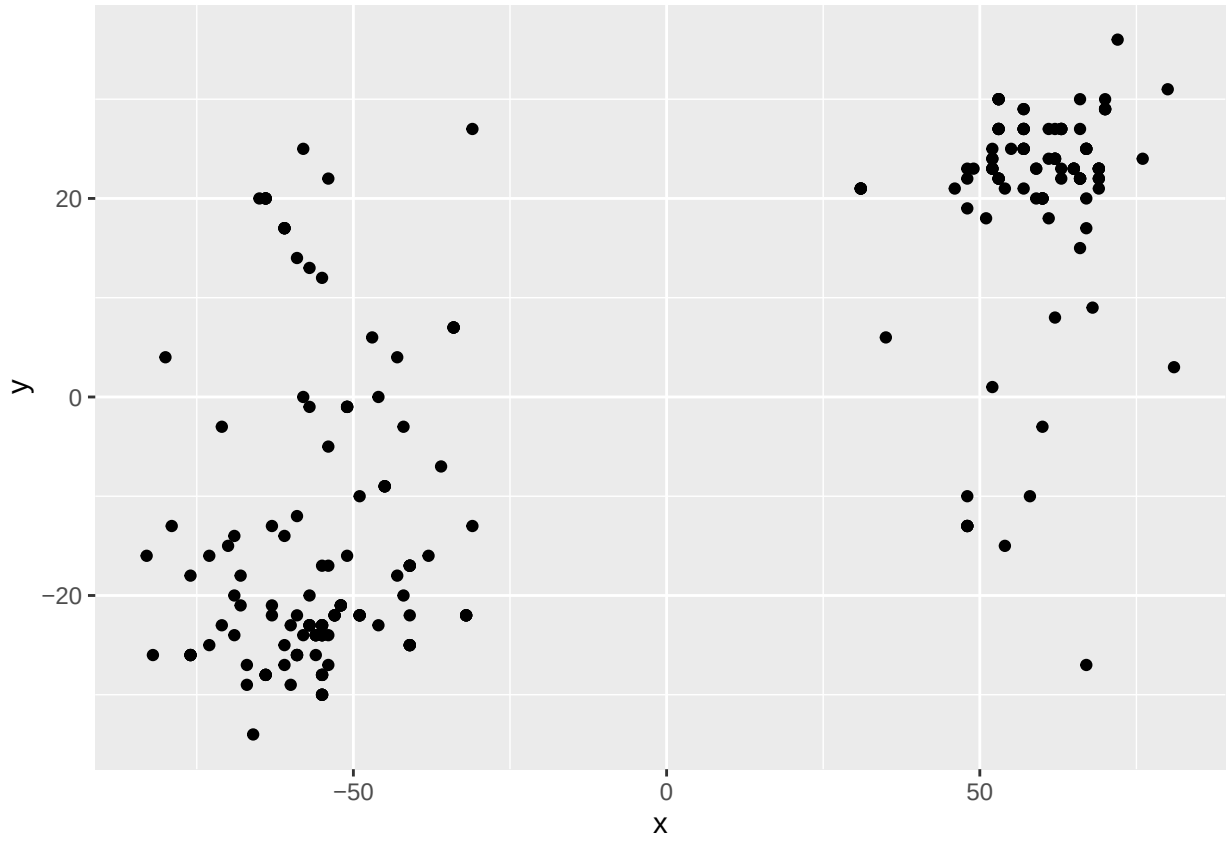
```
## Joining, by = c("play_id", "game_id")
```

We now have a full data set of all shots attempted by Ovechkin

Confirm The Obvious

Everyone in the hockey world knows that Ovechkin loves to take slap shots from his off wing faceoff dot. Let's confirm by limiting the data to only goals off of the slapshot.

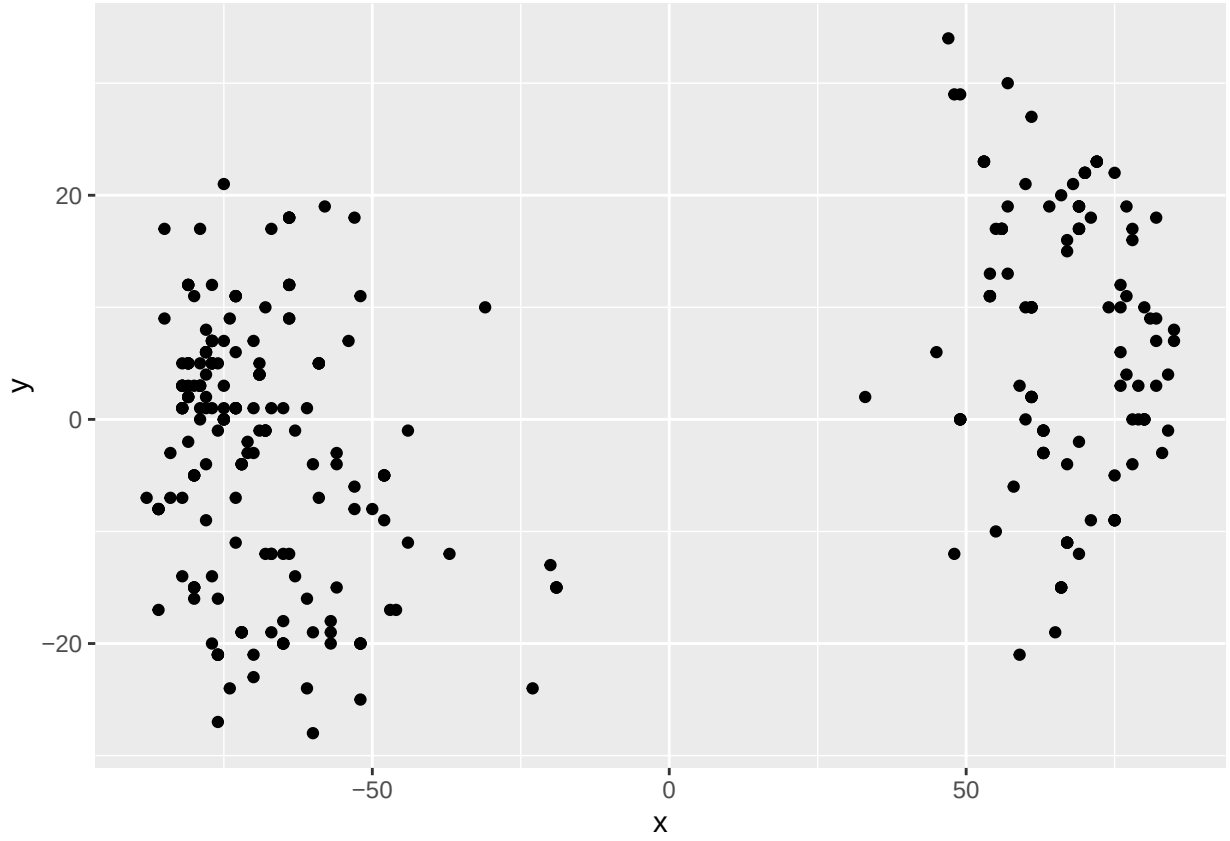
```
ovechkin_shots %>%
  filter(event=="Goal") %>%
  filter(secondaryType=="Slap Shot") %>%
  ggplot(mapping = aes(x,y)) + geom_point()
```



Sure enough, those goals are clustered around the rink coordinates near the faceoff dots at each end. Let us compare this too goals scored that were classified as wrist shots

```
ovechkin_shots %>%
  filter(event=="Goal") %>%
  filter(secondaryType == "Wrist Shot") %>%
  ggplot(mapping=aes(x,y)) + geom_point()
```

```
## Warning: Removed 6 rows containing missing values (geom_point).
```



We see greater diversity and spread of the shots, confirming that Ovechkin particularly uses his slapshot from that one area. We all know this is most common when Ovechkin is on the powerplay, and other teams have adopted similar set ups.

Comparison

The closest player to Ovechkin when it comes to the particular play in question (the slap shot from the left dot) is Stamkos, let's compare the two.

```
player_info %>%
  filter(lastName =="Stamkos")
```

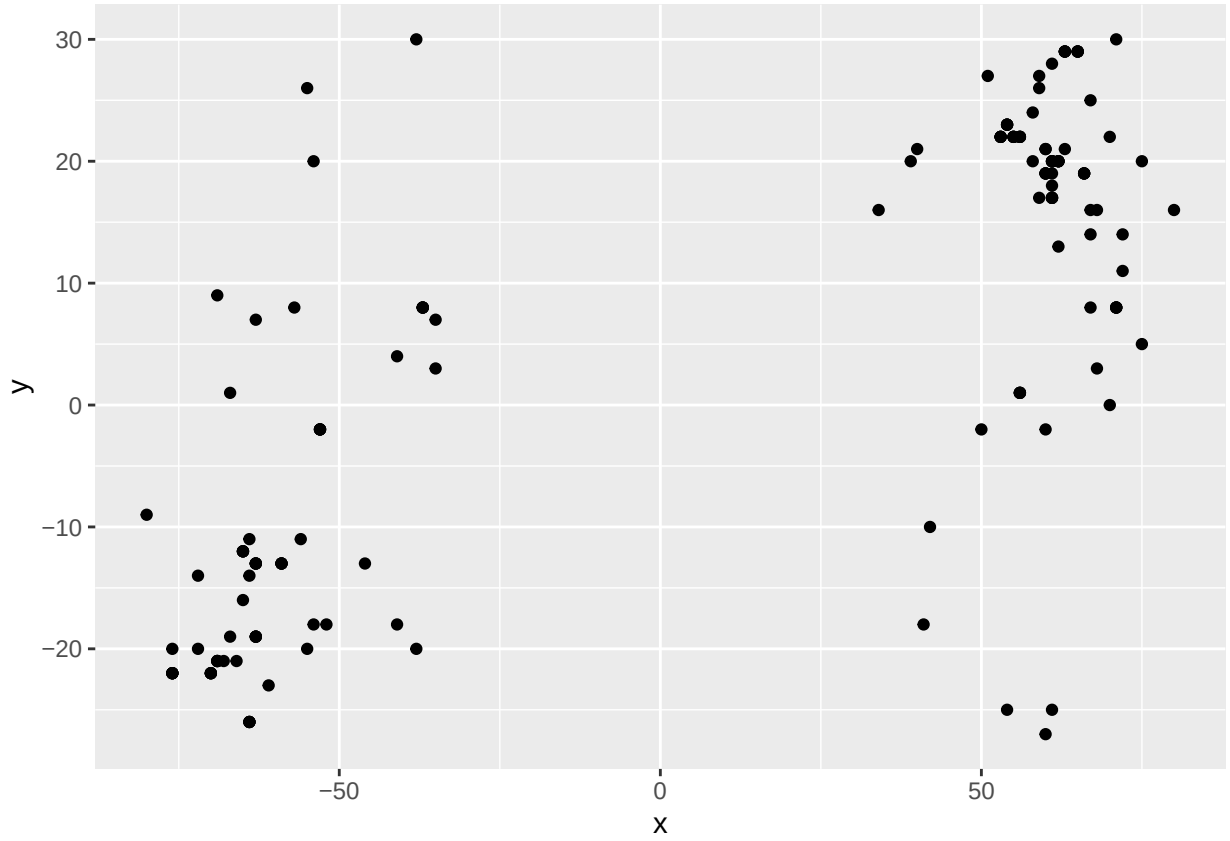
```
##   player_id firstName lastName nationality birthCity primaryPosition
## 1   8474564    Steven  Stamkos         CAN   Markham               C
##            birthDate birthStateProvince height height_cm weight shootsCatches
## 1 1990-02-07 00:00:00                ON  6' 1"    185.42    194             R
```

```
stamkos_shots <- game_plays_players %>%
  filter(player_id=="8474564") %>%
  filter(playerType== "Shooter"| playerType =="Scorer")

stamkos_shots<- stamkos_shots %>%
  inner_join(game_plays)
```

```
## Joining, by = c("play_id", "game_id")
```

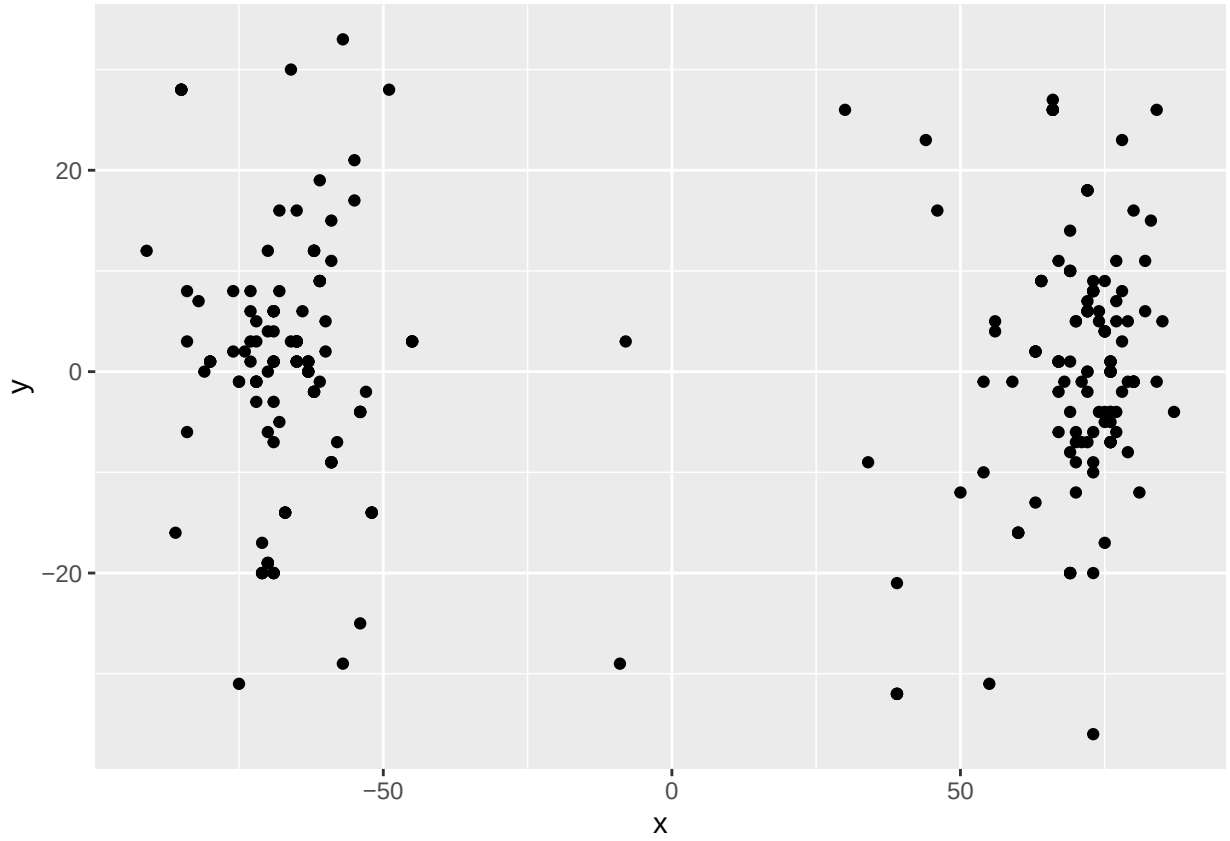
```
stamkos_shots %>%
  filter(event=="Goal") %>%
  filter(secondaryType=="Slap Shot") %>%
  ggplot(mapping=aes(x,y)) + geom_point()
```



The pattern is similar, however we see that Stamkos is more likely to take slapshots from other areas of the ice. What about wrist shots?

```
stamkos_shots %>%
  filter(event=="Goal") %>%
  filter(secondaryType == "Wrist Shot") %>%
  ggplot(mapping=aes(x,y)) + geom_point()
```

```
## Warning: Removed 2 rows containing missing values (geom_point).
```



Let's combine the two for a side by side comparison.

```
player_info %>%
  filter(lastName =="Stamkos")
```

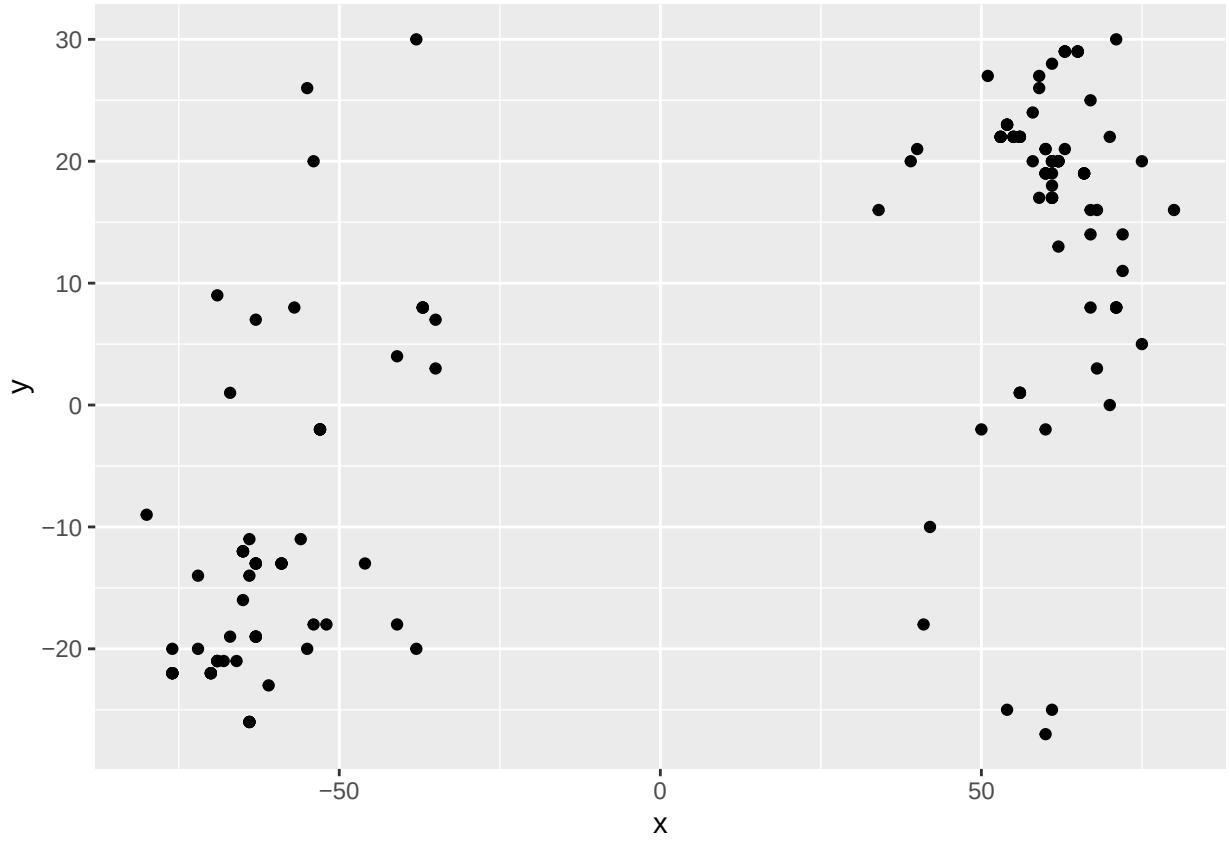
```
##   player_id firstName lastName nationality birthCity primaryPosition
## 1   8474564    Steven  Stamkos         CAN   Markham               C
##             birthDate birthStateProvince height height_cm weight shootsCatches
## 1 1990-02-07 00:00:00                ON  6' 1"    185.42    194             R
```

```
stamkos_shots <- game_plays_players %>%
  filter(player_id=="8474564") %>%
  filter(playerType== "Shooter"| playerType =="Scorer")

stamkos_shots<- stamkos_shots %>%
  inner_join(game_plays)
```

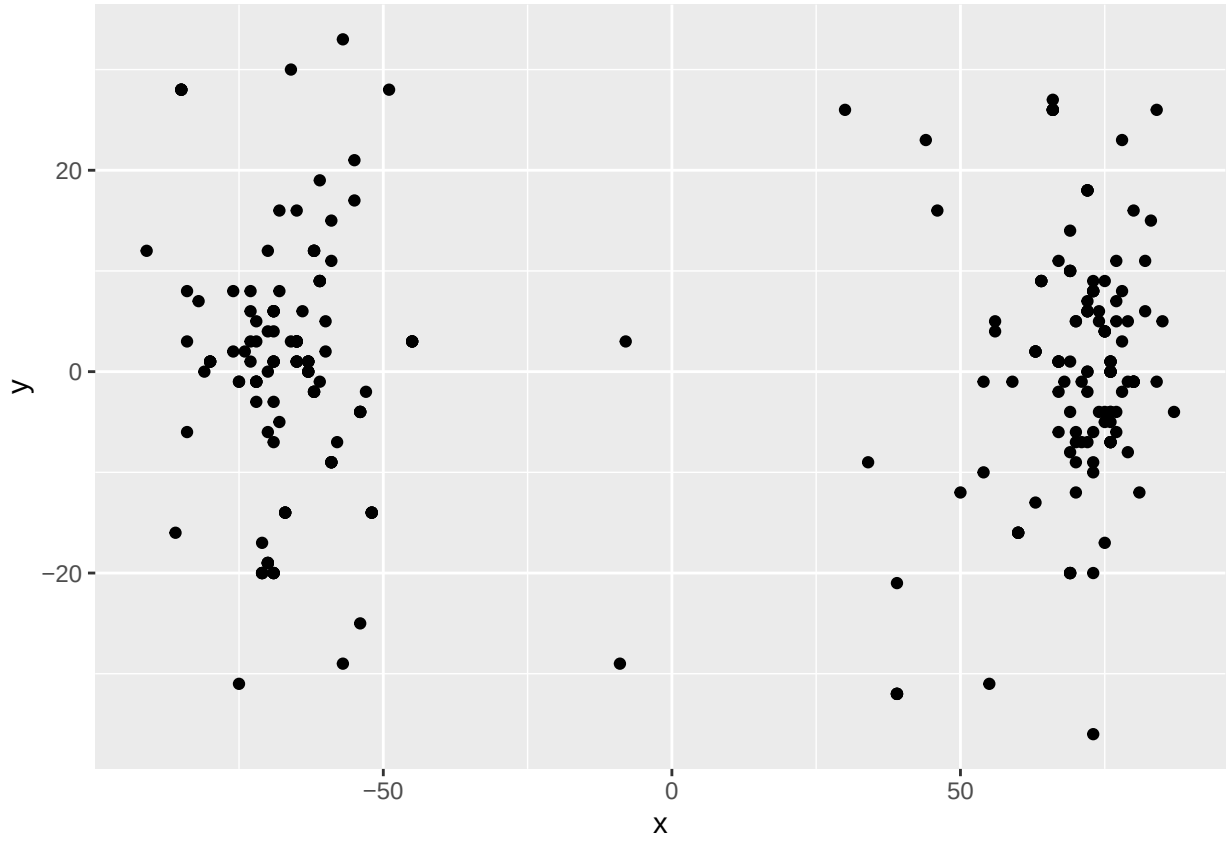
```
## Joining, by = c("play_id", "game_id")
```

```
stamkos_shots %>%
  filter(event=="Goal") %>%
  filter(secondaryType=="Slap Shot") %>%
  ggplot(mapping=aes(x,y)) + geom_point()
```




```
stamkos_shots %>%
  filter(event=="Goal") %>%
  filter(secondaryType == "Wrist Shot") %>%
  ggplot(mapping=aes(x,y)) + geom_point()
```

```
## Warning: Removed 2 rows containing missing values (geom_point).
```




```
ovie_stamkos <- ovechkin_shots %>%
  full_join(stamkos_shots)
```

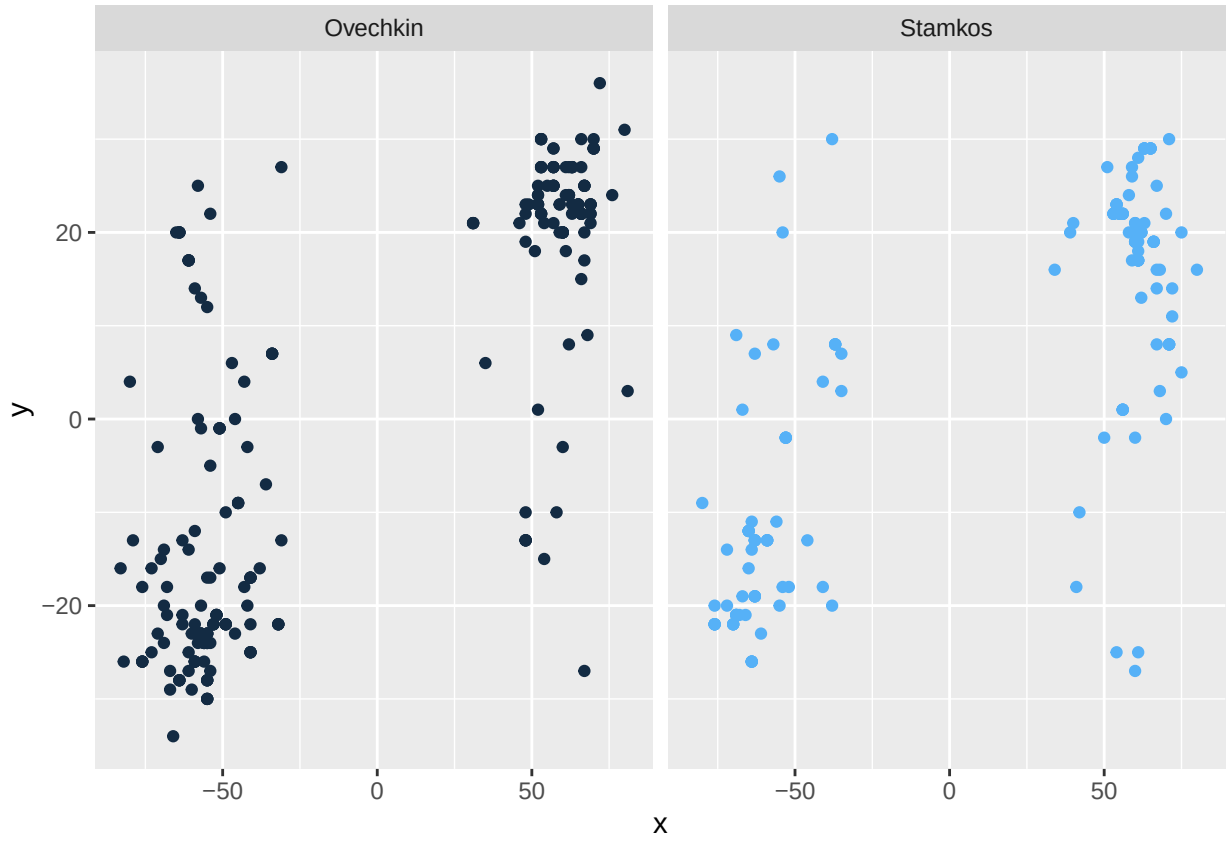
```
## Joining, by = c("play_id", "game_id", "player_id", "playerType", "team_id_for", "team_id_against", "
```

```
ovie_stamkos <- ovie_stamkos %>%
  inner_join(player_info)
```

```
## Joining, by = "player_id"
```

A side by side of all goals scored via slapshot for both players.

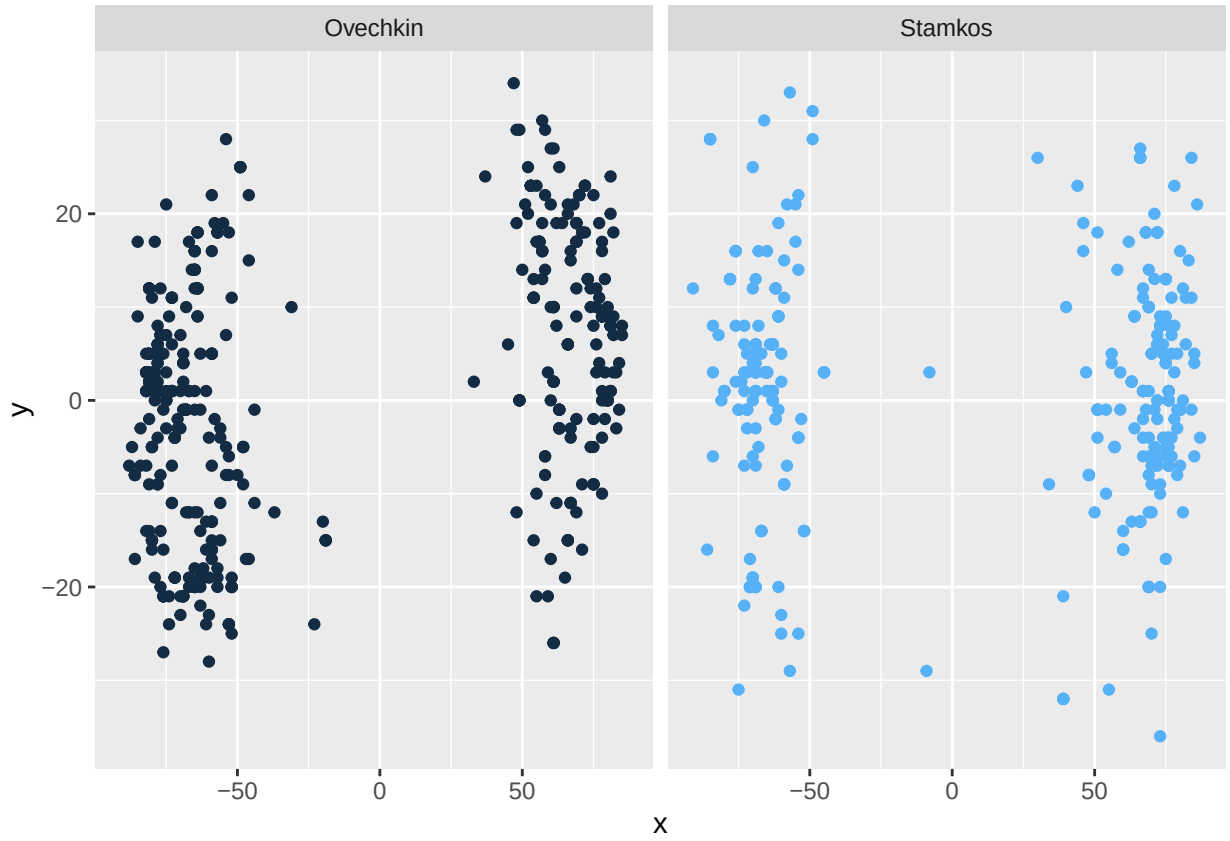
```
ovie_stamkos %>%
  filter(event=="Goal") %>%
  filter(secondaryType =="Slap Shot") %>%
  ggplot(mapping=aes(x,y,color = player_id)) + geom_point(show.legend=FALSE) + facet_wrap(~lastName)
```



And again for all shots that are not slap shots, a side by side comparison of the players

```
ovie_stamkos %>%
  filter(event=="Goal") %>%
  filter(secondaryType =="Wrist Shot" | secondaryType=="Snap Shot") %>%
  ggplot(mapping=aes(x,y,color = player_id)) + geom_point(show.legend=FALSE) + facet_wrap(~lastName)
```

```
## Warning: Removed 10 rows containing missing values (geom_point).
```



A side by side of all their goals shows that they are both well distributed all over the ice; however Ovechkin has a stronger cluster in his office. Let's manipulate the data so that all shots are transposed as if on only one half the ice in order to make the view simpler. We will be flipping along both the x and y axis.

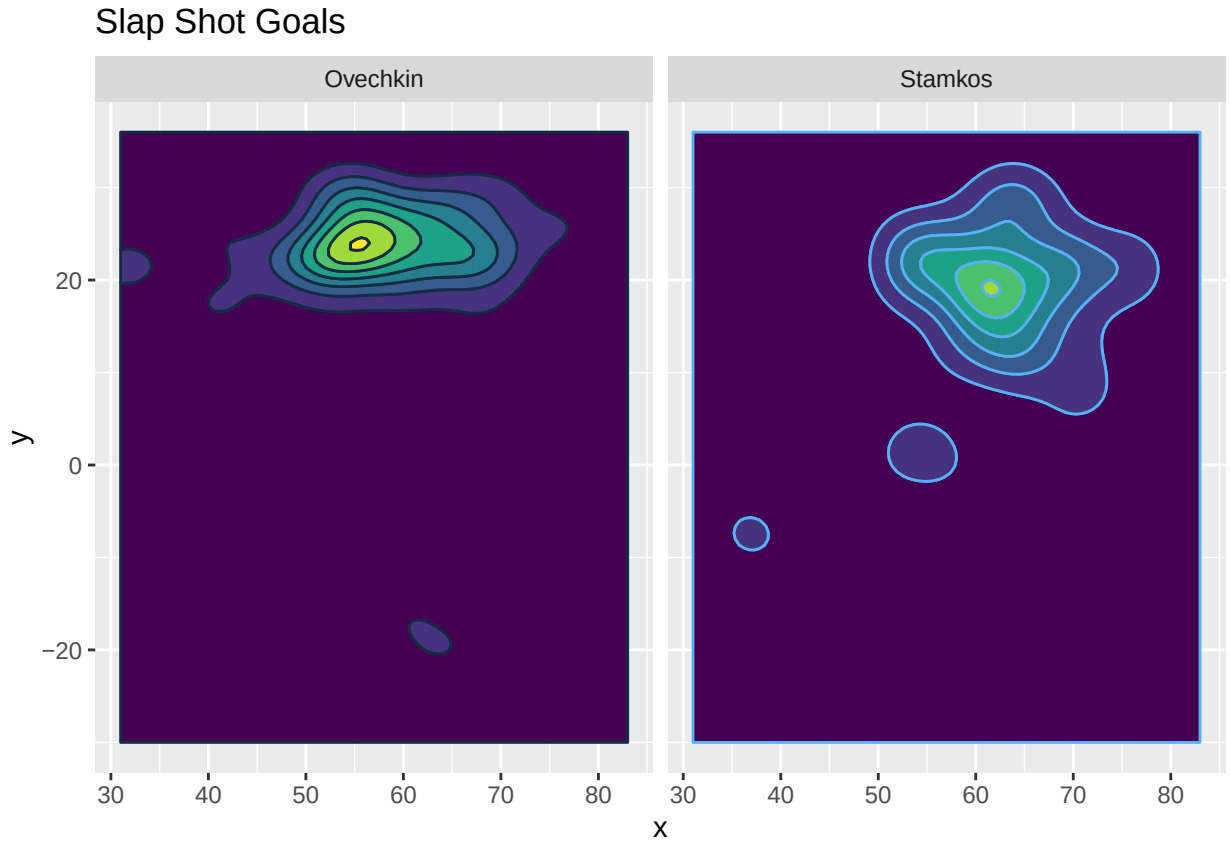
```
manipulate <- ovie_stamkos %>%
  filter(x < 0)
manipulate$x <- manipulate$x * -1
manipulate$y <- manipulate$y*-1

ovie_stamkos <- ovie_stamkos %>%
  filter(x>0)
ovie_stamkos <- ovie_stamkos %>%
  full_join(manipulate)
```

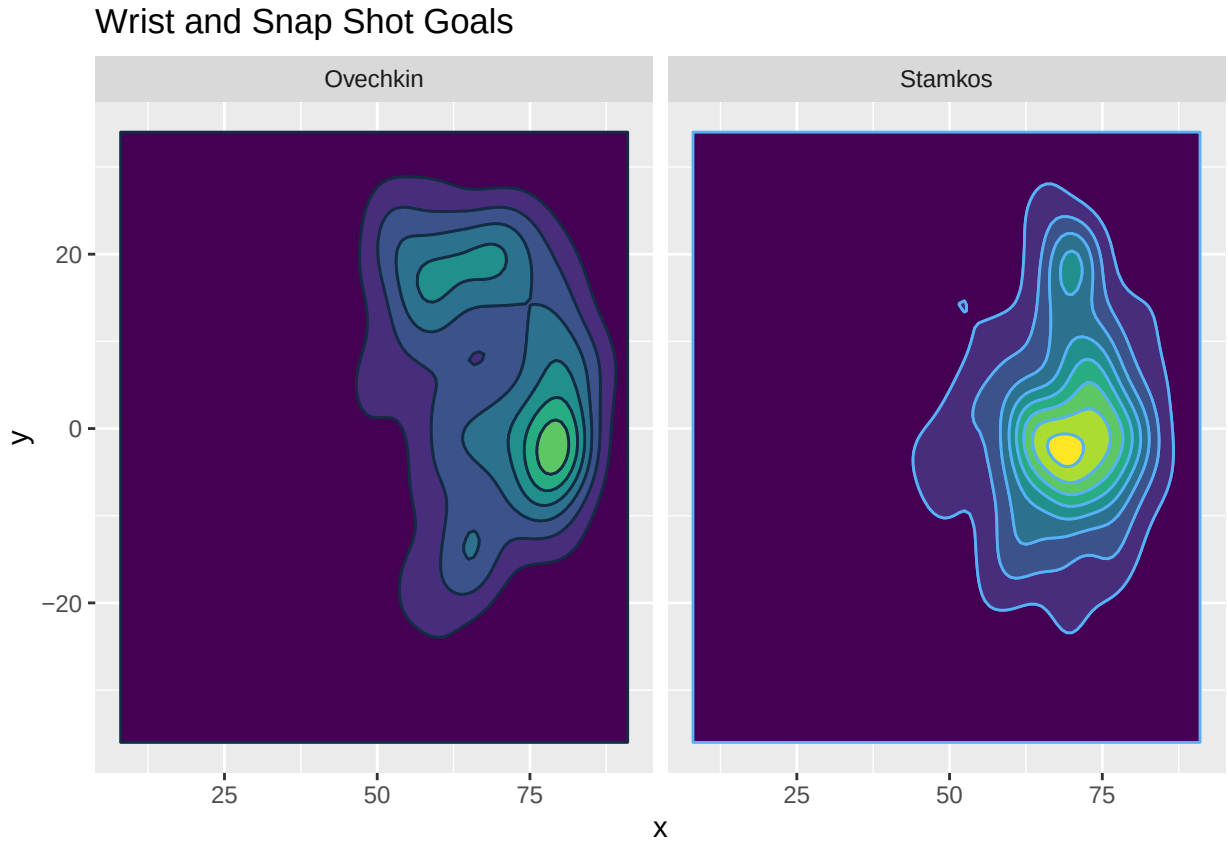
```
## Joining, by = c("play_id", "game_id", "player_id", "playerType", "team_id_for", "team_id_against", "
```

To highlight the differences between the players, we will use density mapping to compare the players. The center of the "goal" would be located at y=0 (middle of the rink, and the "Royal Road") and x=89 (200ft rink, cut in half. The goal line is 11 ft out from the boards).

```
ovie_stamkos  %>%
  filter(event=="Goal") %>%
  filter(secondaryType =="Slap Shot") %>%
  ggplot(mapping=aes(x,y, color=player_id)) + geom_density2d_filled(show.legend=FALSE) + facet_wrap(~las
```




```
ovie_stamkos  %>%
  filter(event=="Goal") %>%
  filter(secondaryType =="Wrist Shot" | secondaryType=="Snap Shot") %>%
  ggplot(mapping=aes(x,y, color=player_id)) + geom_density2d_filled(show.legend=FALSE) + facet_wrap(~las
```



We can clearly see that Ovechkin is a much greater threat off his slap shot from the faceoff dot, however Stamkos scores more goals by getting to the front of the net, this makes sense as Stamkos spends time playing center. Additionally we see that even on the slap shots, Ovechkin likes to set up higher in the zone, closer to the top of the circle, where as Stamkos will set up lower, and closer to the hashmarks.