



# **The Effect of In-Game Events and Challenges on User Engagement in GTA V**

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# STRATEGY



We focus on 2 major GTA V online events that occur between the dates in the dataset provided

1. Halloween Week 2020: October 29, 2020 - November 4, 2020
2. Heist Challenge 2020: November 12, 2020 - November 18, 2020

We analyze time spent, money spent, and in-game activities

We track changes **1 week before the event, 1 week during the event and 1 week after the event**

Data Cleaning: remove modders (with impossibly high rp values)

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*Event: Halloween  
Week*

# Halloween Event

- Event from Oct 29, 2020 to Nov 3, 2020

## Discounts

- Discounts on selected vehicles:
  - Albany Lurcher - 30% off
  - Chariot Romero Hearse - 30% off
  - LCC Sanctus - 30% off
  - MTL Nightmare Cerberus - 50% off
  - Declasse Nightmare Brutus - 50% off
  - HVY Nightmare Scarab - 50% off
  - Vapid Nightmare Imperator - 50% off
  - Annis Nightmare ZR380 - 50% off
- Discounts on selected properties and upgrades:
  - All Facilities - 40% off
  - All Facility Upgrades and Modifications - 25% off
- Exclusive Bonuses and Discounts for Prime Gaming members:<sup>[8]</sup>
  - Imponte Deluxo - 60% off
  - Players could receive the Vespucci Canals Nightclub location for free.
  - Players who link their Amazon account to their Rockstar Games Social Club account received GTA\$1,000,000.
- The unmentioned 50% classic car discounts from the previous ten weeks were removed.

## Bonuses

- The Lucky Wheel prize was changed from the Annis S80RR to the Albany Fränken Stange.<sup>[1]</sup>
- Players who logged in during the week received the Orange Dot Tech Mask, the Butchery And Other Hobbies Tee, and the Knife After Dark Tee.<sup>[2]</sup>
- Double GTA\$ and RP for all Alien Survival gamemodes.<sup>[3]</sup>
- Double GTA\$ and RP for all Business Battles.<sup>[4]</sup>
  - For a limited time, a special UFO-themed Business Battle was available.<sup>[5]</sup>
  - Additionally, players who completed an Event Cargo Business Battle would receive the Cultstoppers Tee.<sup>[6]</sup>
- Double GTA\$ and RP for all Halloween-themed Adversary Modes:<sup>[7]</sup>
  - Beast vs. Slasher
  - Come Out to Play
  - Condemned
  - Lost Vs Damned
  - Slasher
  - Slashers

Preceded by	GTA Online Bonuses (October 2020 Part 4)
Succeeded by	GTA Online Bonuses (November 2020 Part 1)

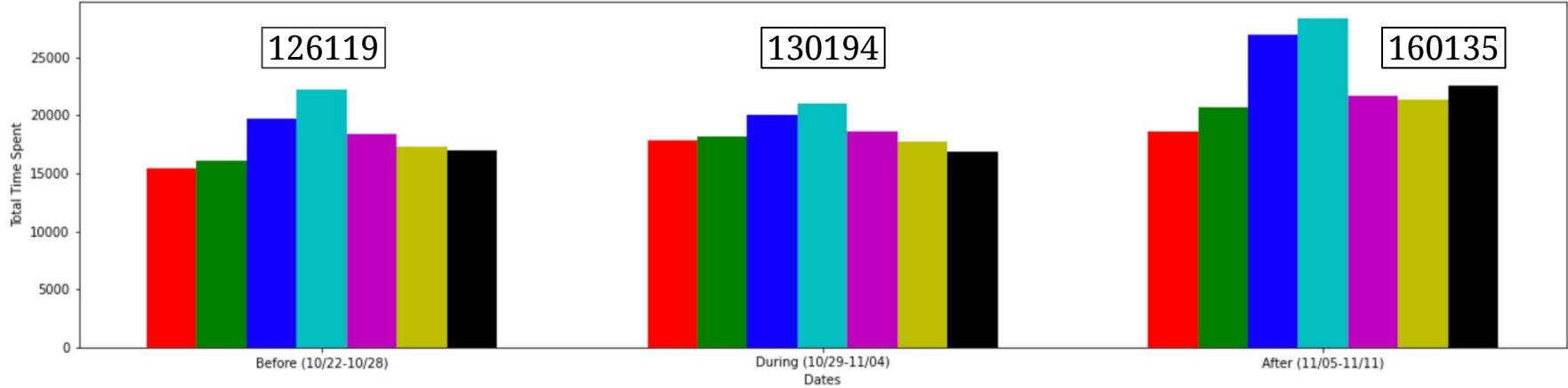
# Time Spent Analysis

Analyzing Player Time Spent



## Halloween Week - Time Spent Analysis

Time Spent By Players Each Day Before, During, and After Event



\*numbers above graph represents weekly total time spent

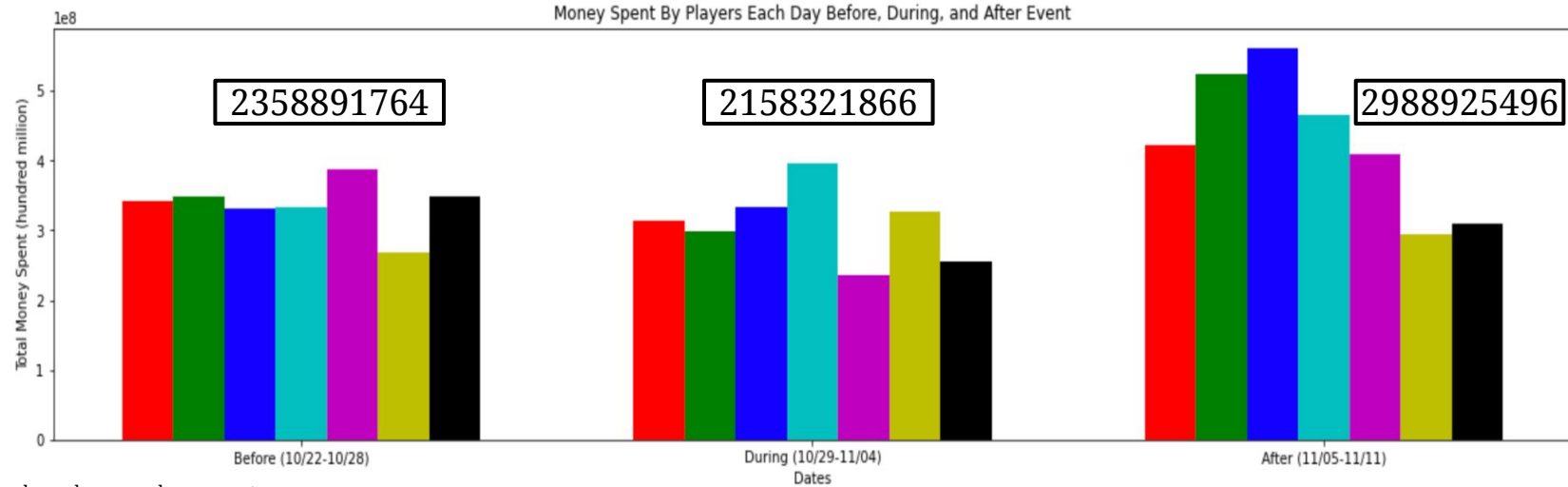
- Running a z-test confirms that the average time spent before and during the event is not significant as shown by the p-value of 0.57.
- However, there is a significant difference between average time spent before the event and after the event (p-value of 0.002)
- There is also a significant difference between average time spent during the event and after (p-value of 0.003)

# Money Spent Analysis

Analyzing Player Money Spent



## Halloween Week - Money Spent Analysis



\*numbers above graph represents weekly total money spent

- The p-value of 0.24 shows that there is not a significant difference between money spent before and during the event.
- However, the p-value of 0.02 and 0.0056 show that there is a significant difference between money spent before and after the event, and during and after the event, respectively



# Activity Analysis

Analyzing Player Activities During Event Periods



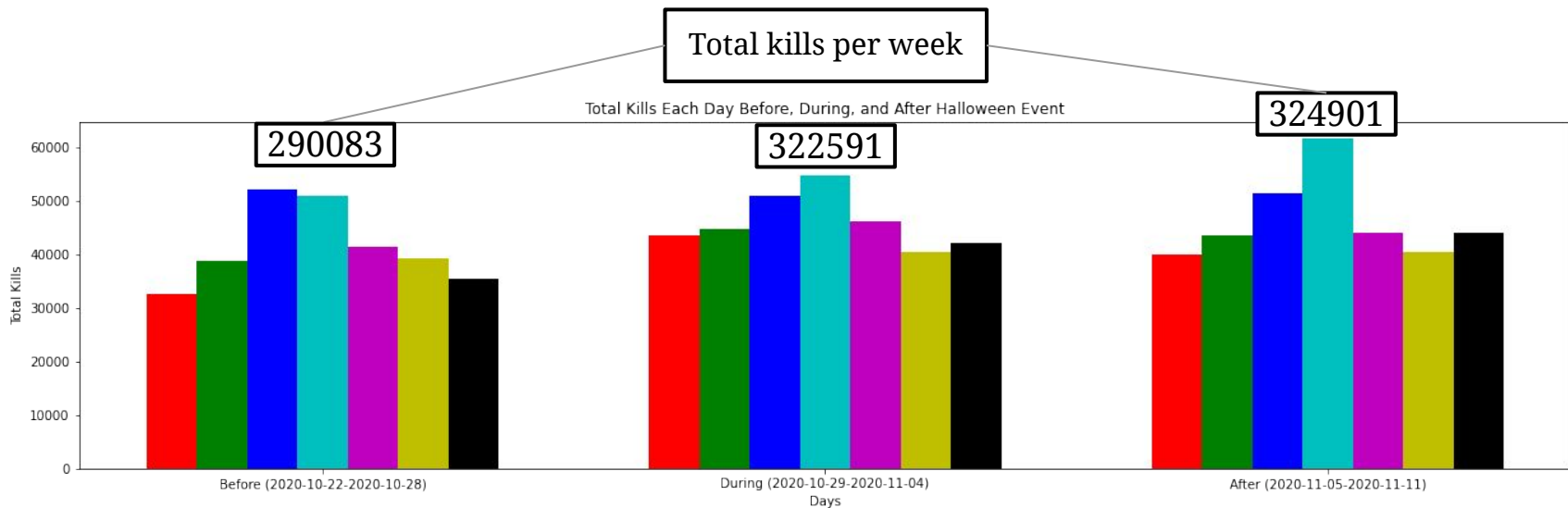
# Halloween Activity Analysis

- Measure player activity through various statistics: kills, deaths, money, and reputation (rp) earned



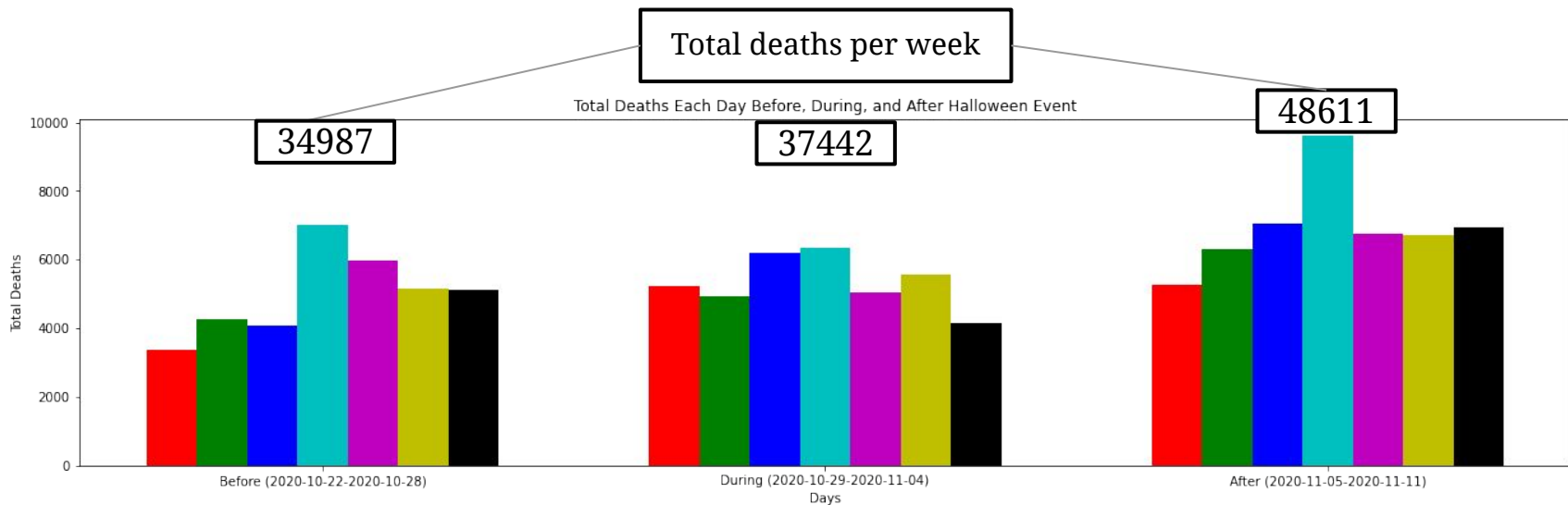
# Halloween Kills

- Total kills per day increase slightly during and after event
- Not a significant increase in kills per day during the event
- Insight: players spent the Halloween week buying weapons, vehicles, and other in-game items and started actively using them a week after the discounts ended leaving a higher number of kills per week after the event



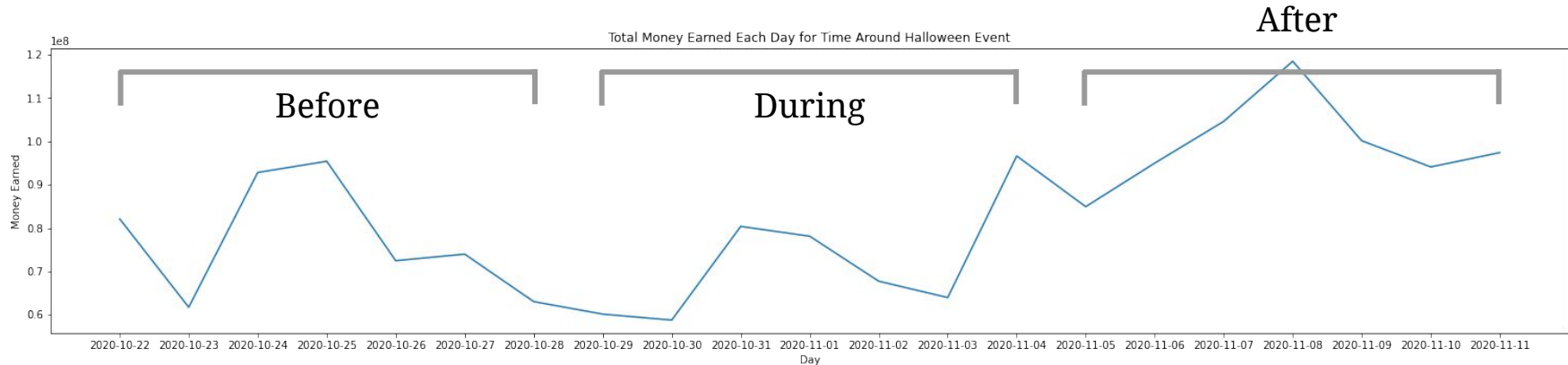
# Halloween Deaths

- Total deaths per day increase slightly during event
- Unlike kills, there is a significant increase in deaths after event
- Insight: players spent Halloween week purchasing new, cheaper items in the store and after the event ended, they spent time using their newly purchased items which led them to be more aggressive as well as vulnerable leading to more deaths



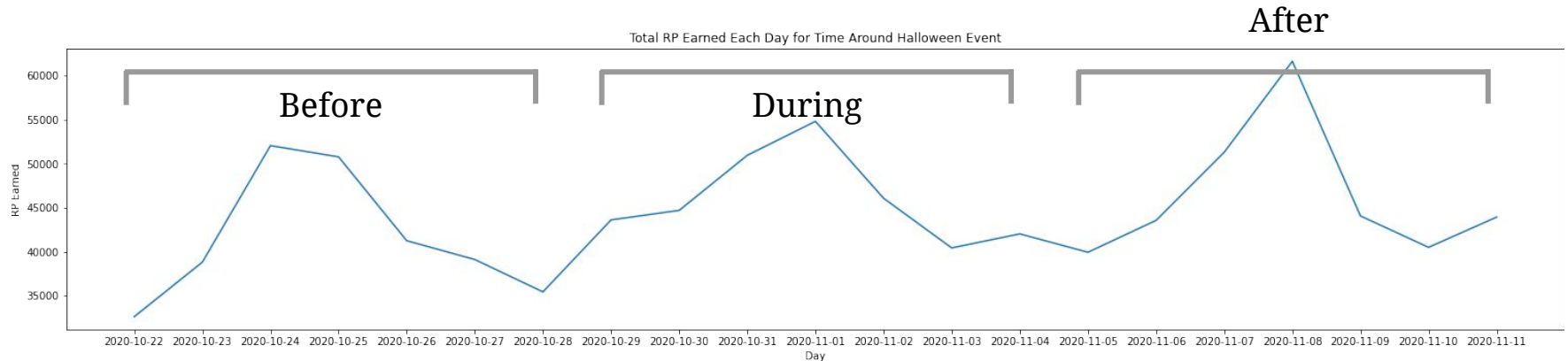
# Halloween Money Earned

- Total money earned per day increase slightly during event
- Unlike kills, there is a significant increase in money earned after event
- During the event, we see a steep decline in money earned by players
- Insight: players spend time in garages and home to spend money instead of engaging in activities that earned them money. Once the event is over, we see a spike in money being earned as players try to recover spent income and use their new weapons, cars to earn money quicker



# Halloween Reputation Earned

- Total reputation (experience) earned per day increase slightly during the event
- There is a small increase in reputation (experience) earned after the event
- Insight: Similar trend as money earned. Players spend time in garages and home to spend money instead of engaging in activities that earn them RP. Once the event is over, we see a spike in RP being earned as players try to earn RP quicker



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# *Event: The Heist Challenge*

# Heist Event

- Event from November 12, 2020 to November 18, 2020

## Discounts

- **Casino Heist Setup Cost** - 75% off
- Discounts on selected vehicles:
  - **Vapid Retinue** - 40% off
  - **Vapid Retinue Mk II** - 40% off
  - **Karin Everon** - 40% off
  - **Übermacht Rebla GTS** - 40% off
  - **Lampadati Komoda** - 40% off
  - **Grotti X80 Proto** - 30% off
- Discounts on selected properties and upgrades:
  - **All Arcades** - 30% off
  - **All Arcade Customizations** - 30% off
  - **Master Penthouse** - 40% off
  - **All Master Penthouse Customizations** - 35% off
- Discounts on selected Arcade Machines - 30% off:
  - **Space Monkey 3: Bananas Gone Bad**
  - **Race and Chase: Crotch Rockets**
  - **Shiny Wasabu Kitty Claw**
  - **QUB3D**
  - **Axe of Fury**

## Bonuses

- Community Event: The Heist Challenge
  - Players competed to collectively earn **GT\$100 Billion** from any **Heist Finale** by the end of the event week. If the community reached this goal, they would be rewarded with a special new vehicle, free of charge, in the next upcoming update to **GTA Online**. Players who participated in this event would also receive a special badge of honor for their efforts.
    - On December 15th, the **Veto Classic** was announced as the reward, claimable for free from **Southern San Andreas Super Autos** between 18th and 20th December before it became available for sale from the 21st. The Panther Varsity Jacket was the "badge of honor" reward.<sup>[1]</sup>
- The **Lucky Wheel** prize was changed from the **Vapid Caracara 4x4** to the **RUNE Zhaba**.<sup>[2]</sup>
- Players who logged in during the week received **GT\$1,000,000** the following week.<sup>[3]</sup>
- Players who logged in during the week received the **Invade and Persuade Barrels Tee**.<sup>[4]</sup>
- **Diamonds** return as possible Vault Contents for **The Diamond Casino Heist**.<sup>[5]</sup>
- **Double GT\$ and RP** for **Casino Story Missions**.<sup>[6]</sup>
- **Double GT\$ and RP** for the **Resurrection Adversary Mode**.<sup>[7]</sup>

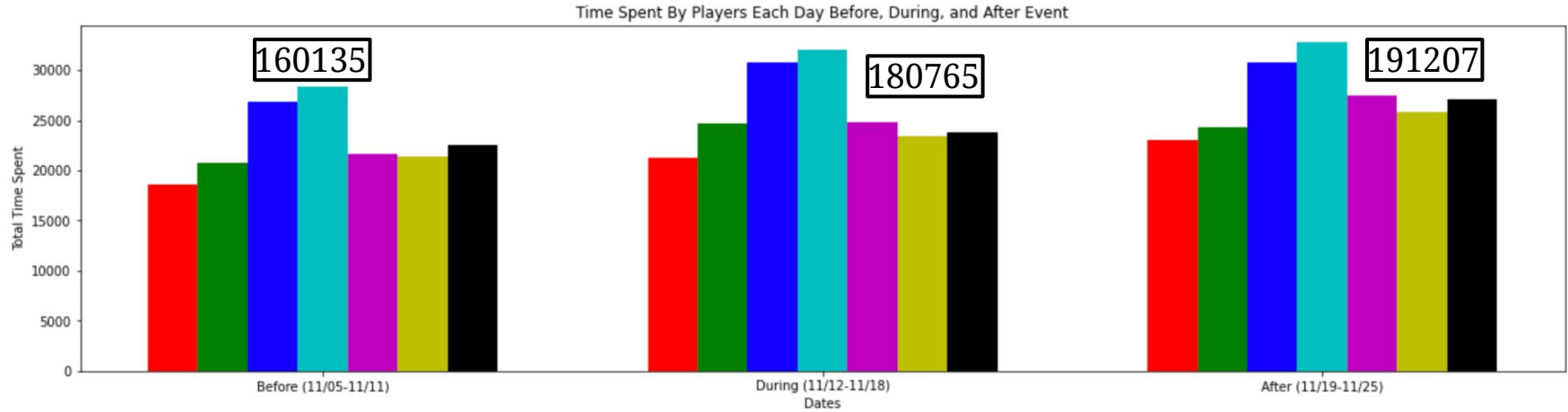


# Time Spent Analysis

Analyzing Player Time Spent



## The Heist Challenge - Time Spent Analysis



\*numbers above graph represents weekly total time spent

- As shown by the z-test analysis, we see that although we did see a difference between player time spent before and during the event, the p-value of 0.14 is not a significant enough difference to conclude the event drove up time spent
- However, there is a significant difference at the 5 percent level between time spent before and after the event since the p-value is 0.017

## The Heist Challenge - Time Spent Analysis

```
ztest(befheistarr, durheistarr, value=0)
(-1.4657160370375657, 0.14272566331907405)

ztest(befheistarr, afterheistarr, value=0)
(-2.388711737950869, 0.016907562500980994)

ztest(durheistarr, afterheistarr, value=0)
(-0.7419550251881216, 0.45811458538524663)
```

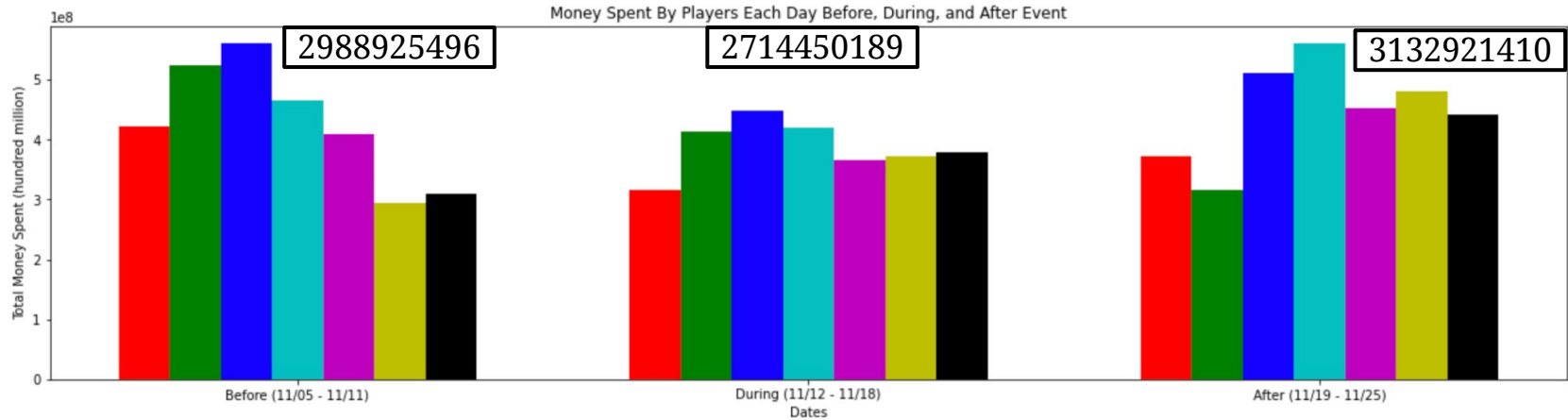
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# Money Spent Analysis

Analyzing Player Money Spent



## The Heist Challenge - Money Spent Analysis



\*numbers above graph represents weekly total money spent

- As shown by the z-test analysis, there is no significant change at the 5 percent level in total money spent throughout the 21 day period
- However, comparing the average total money spent during and after the heist shows some significance at the 10 percent level as the p-value is 0.09.
- We hypothesize the total spending does not change too drastically throughout the 21 day period because there was an event that also offered discounts just over a week before the event started
  - Additionally, the heist challenge offered incentives players to EARN money, instead of spending money

## The Heist Challenge - Money Spent Analysis

```
ztest(money_spent_before_heist, money_spent_during_heist)
(0.9531970456761393, 0.3404902429915607)

ztest(money_spent_before_heist, money_spent_after_heist)
(-0.418966420879128, 0.6752406732159177)

ztest(money_spent_during_heist, money_spent_after_heist)
(-1.6946007025822878, 0.0901511937110463)
```

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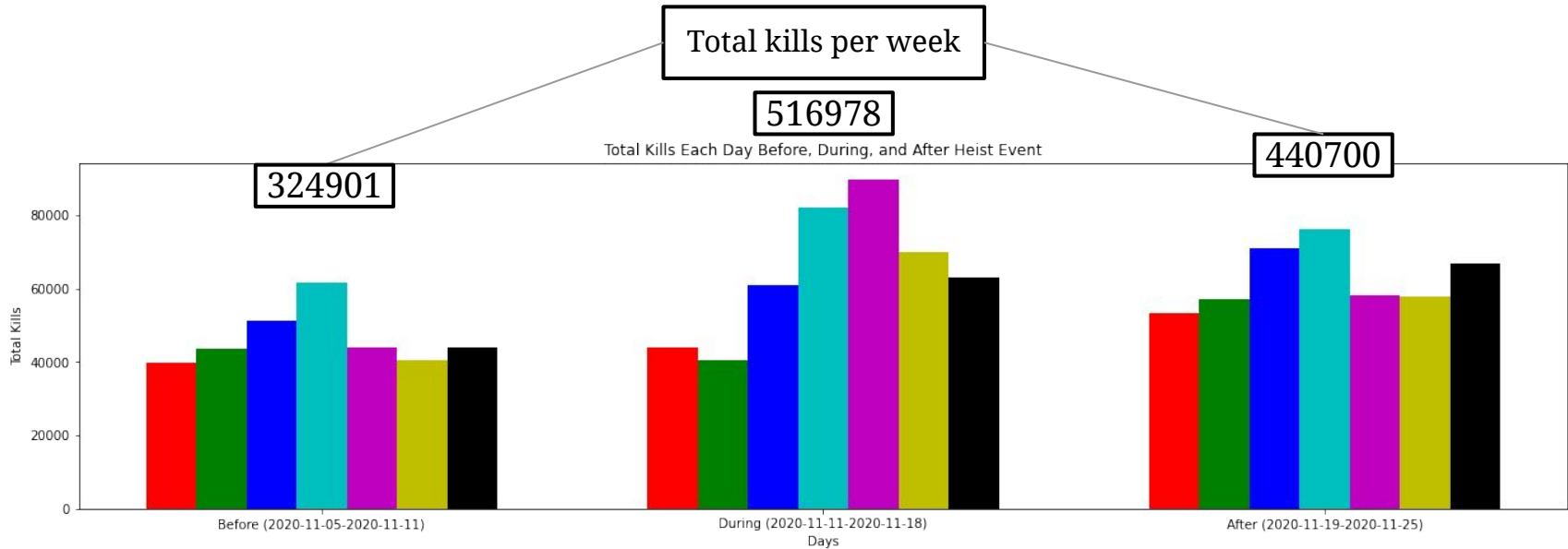
# Activity Analysis

Analyzing Player Activities During Event Periods



# Heist Kills

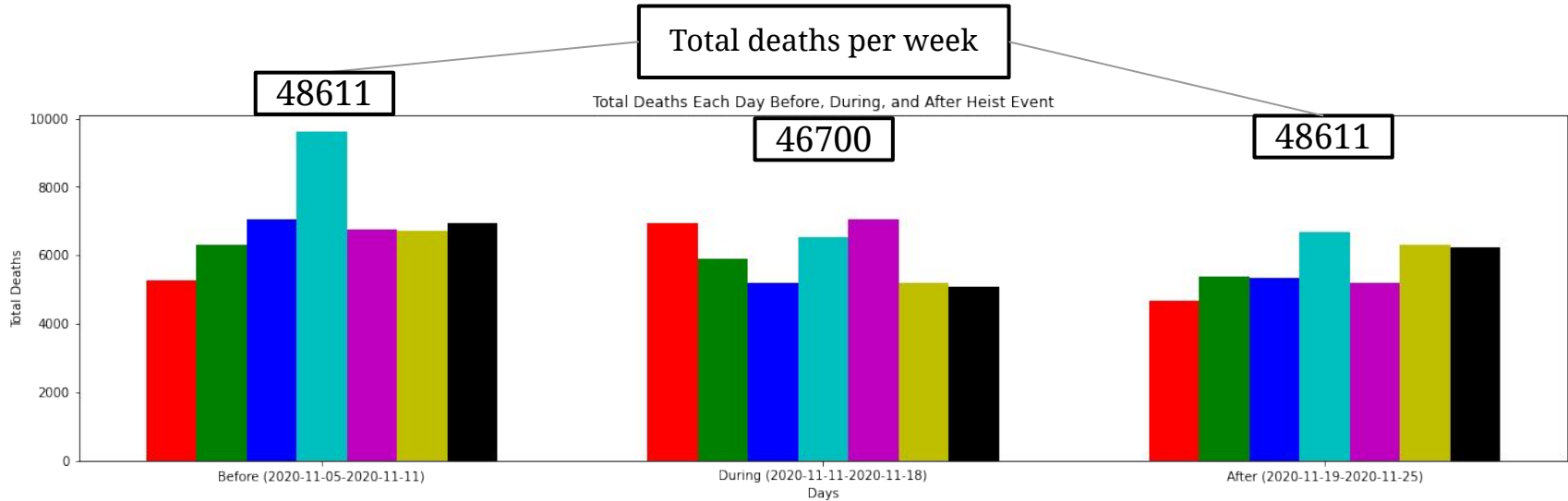
- Total kills per day increase significantly during the event
- Insight: the heist had lots of bonuses for violence against other players and NPCs. This led to an increase in the number of total kills per week and declined as soon as the bonuses were removed after the event week





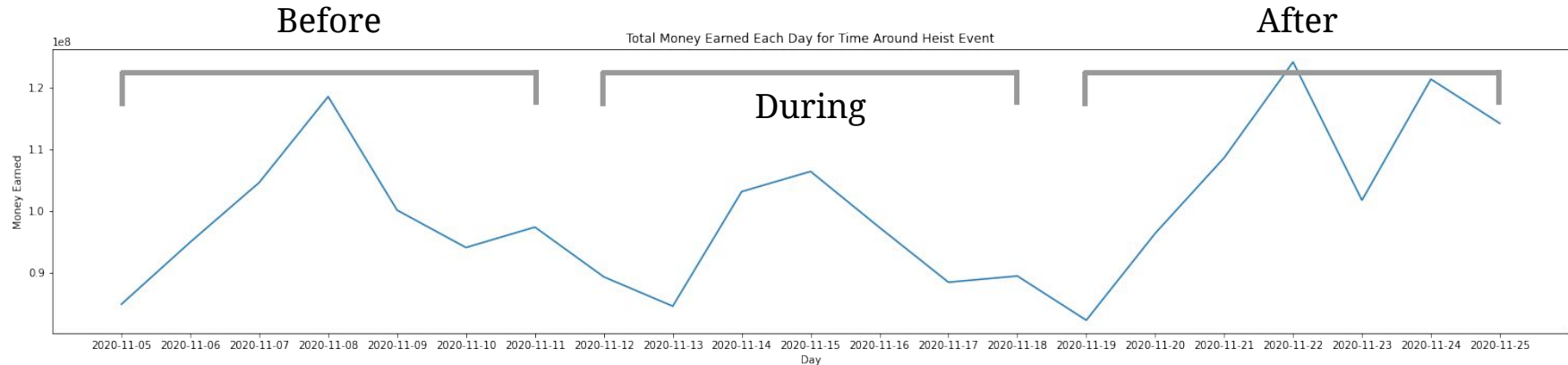
# Heist Deaths

- Total deaths per day decrease slightly during event despite increase in kills
- Insight: Suggests heist content was not challenging as players were able to kill significantly more enemies while not dying more



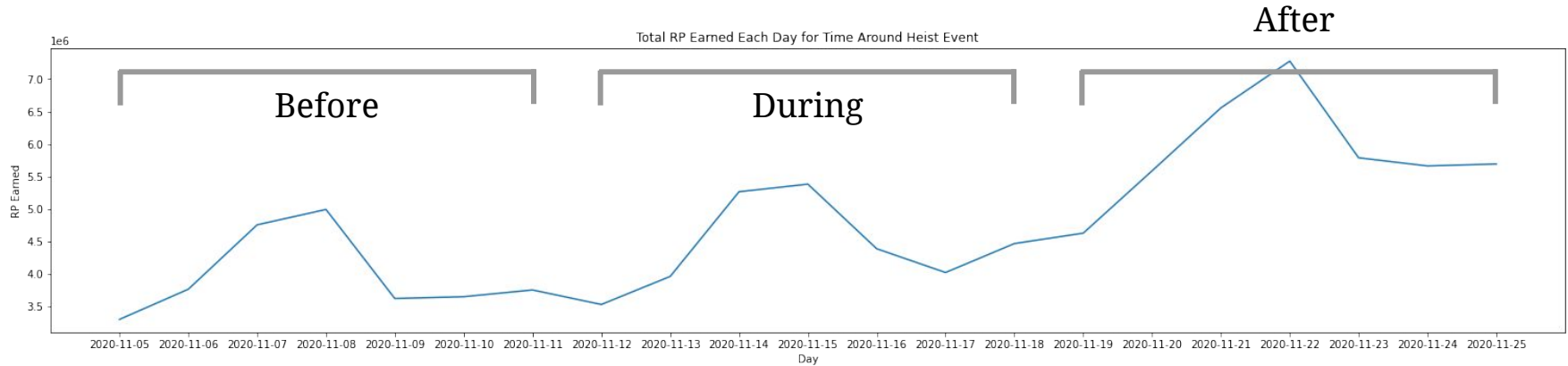
# Heist Money Earned

- Total money earned per day decreases slightly during event but increased significantly after the event
- Insight: The monetary rewards for spending time on the Heist event were not comparable to other areas of the game
- Increase in money earned may be a result of \$1M bonus given to players in the week following the event



# Heist RP Earned

- Total reputation (experience) earned per day increase significantly after event
- Insight: Players were motivated to complete more missions or missions with higher reputation rewards following the event because the Heist event did not reward the reputation experience they aimed for



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# *Event Comparison*

# Comparison



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# *Improvements and Future Scope*

### Improvements in Data and Methodology

- Include data that covers DLC releases (expand time range provided)
- Currently, after event week in Halloween event overlaps with before event week in Heist event. Pick events that have no time overlap
- Eliminate outlier modders in the data before processing
- Use ML clustering algorithms to identify unintuitive patterns related to DLCs

### Future Scope

- How do DLC releases impact engagement?
- Analyze event-specific item purchases and challenge engagements
- Analyze time, money spent, and activity across platforms (PC, Xbox, PS4)
- Use ML to predict future event/DLC outcomes based on current data

# TEAM



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