



Association Between Player's Knowledge and Video Game Performance

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Team GoStats - DataFest 2022

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Terminology



Population
Adolescents aged 11-14 years

High Risk Behaviour



Sexual Health



HIV



Substance Use

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Topics Covered



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Motivation

Researchers @ the Play2Prevent Lab

**Can in-game performance
provide a better reflection of
player's real-life behaviors,
especially towards high risk
behaviors?**

Team GoStats

● ● ●
is typing



Data Exploration

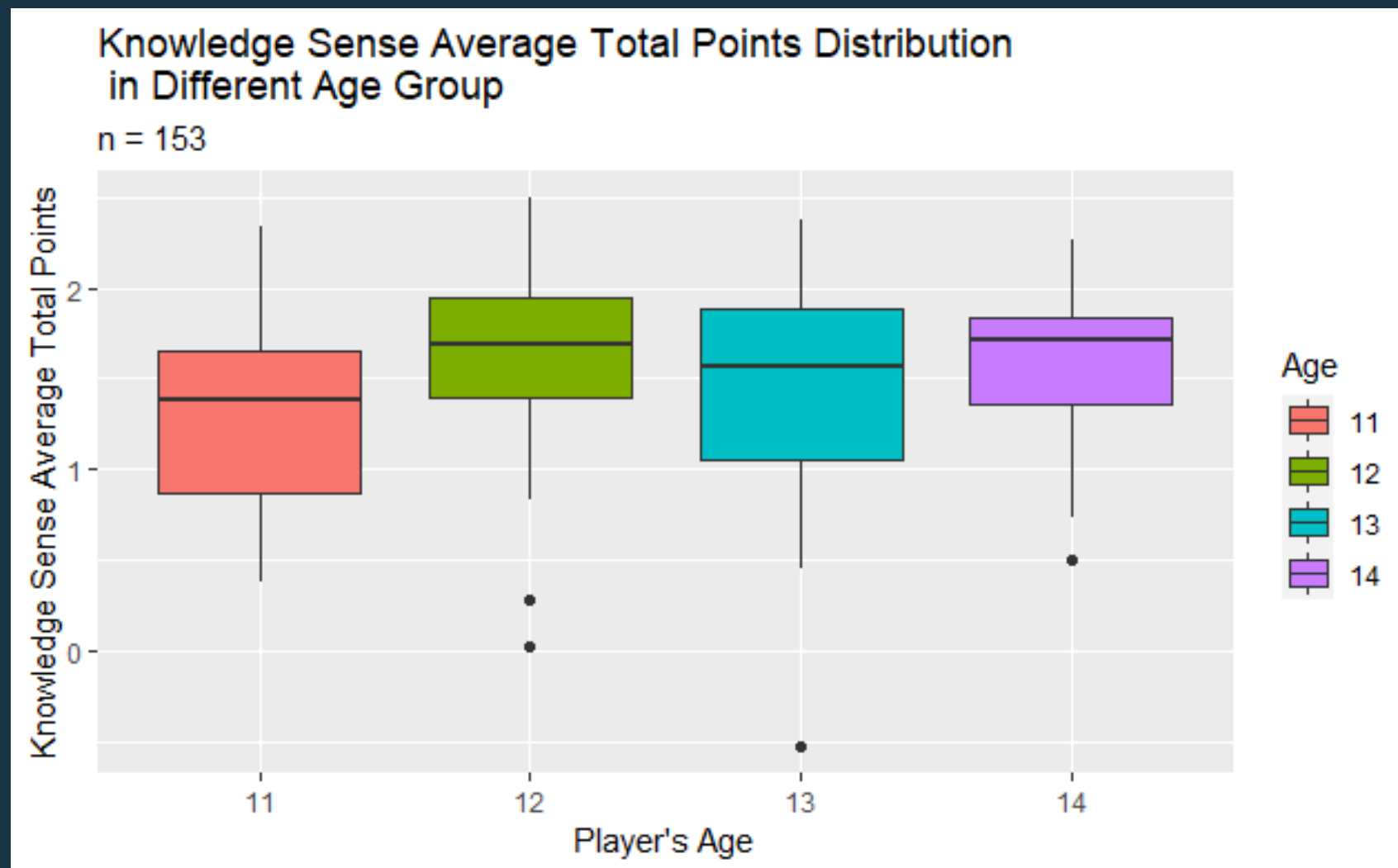


Figure 1

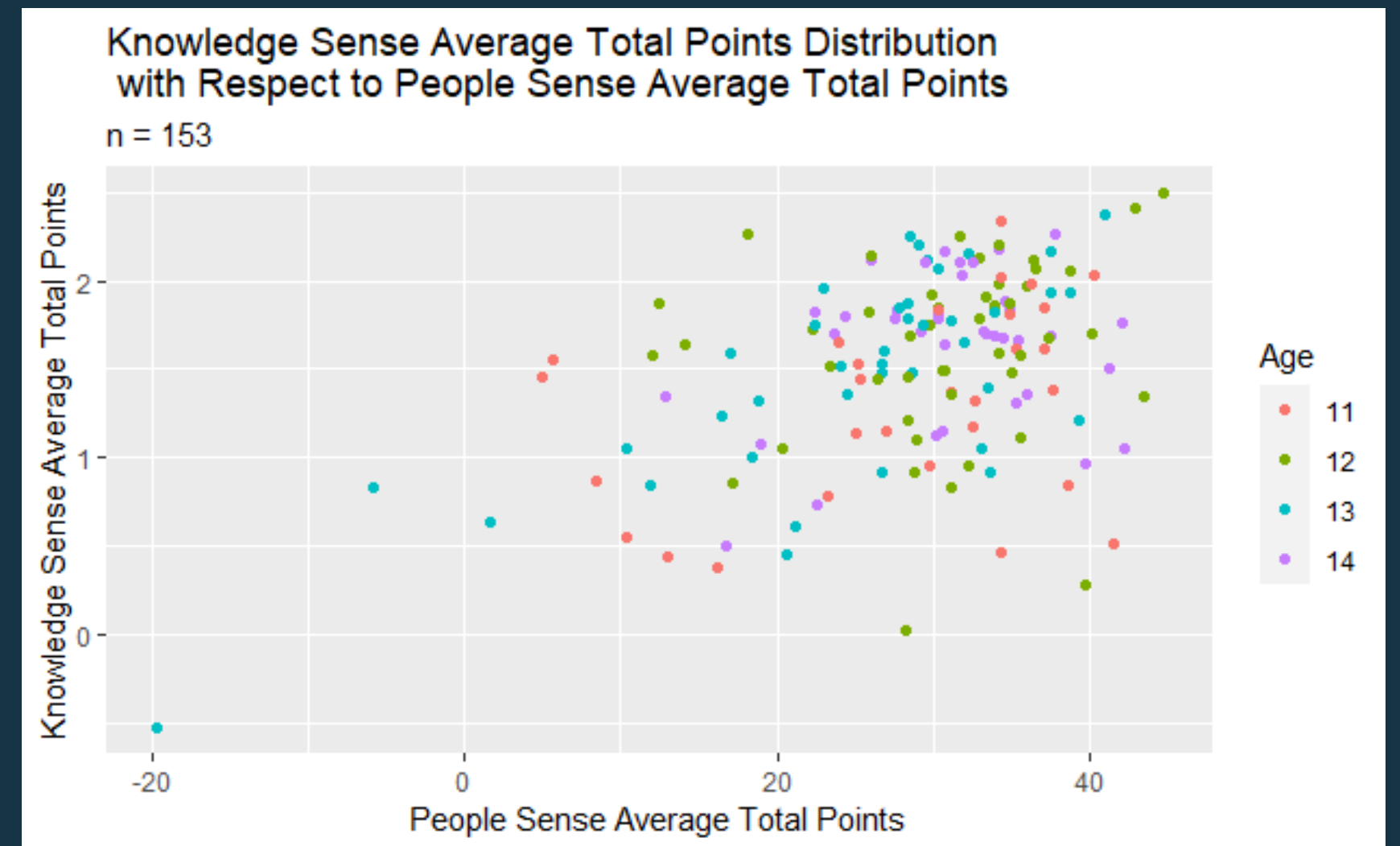


Figure 2



Research Question

How does In-Game Performance Predict
Player's Knowledge on High Risk Behaviors?



Methodology

1. Variables Determination:

- **Knowledge Sense:**
 - Average total points
- **People Sense:**
 - Average total points
 - Total missed safe invitation
 - Total accepted unsafe invitation
- **Refusal Sense:**
 - Average Points Loss
 - Total Correct Responses

2. Simple Linear Regression

- Stepwise Algorithm concerning various statistical criteria

3. All analyses are done using **R** and **olsrr** package



Analysis & Interpretation



Model Assumptions

1. Linearity
2. Normality (Standard Normal Distribution)
3. Independency
4. Homoscedasticity (Equal Variances)



Simple Linear Model

- **Dependent Variable**
Knowledge Sense Average Total Points
- **Independent Variable**
Player's Age
People Sense Average Total Points
Total Missed Safe Invitations
Total Accepted Unsafe Invitations
Average Points Loss in Refusal Sense



Model Summary

	Estimates	P-Value
(Intercept)	2.2746	0.00
Average People Sense Total Score	0.0064	0.16
'Age 12'	0.0371	0.69
'Age 13'	0.1428	0.13
'Age 14'	0.1017	0.30
Average points loss in Refusal Sense	-0.0521	0.00
Total Missed Safe Invitations	-0.2210	0.02
Total Accepted Unsafe Invitations	-0.4745	0.00



Let's Discuss, shall we?



Discussion

3 Significant Knowledge Level Indicators

- Average Points Loss in Refusal Sense
- Total Missed Safe Invitations
- Total Accepted Unsafe Invitations

Limitations

- Limited testing on model assumptions
- Unaccounted potential confounding variable(s)
- Limited population group
- Preliminary Results



Conclusion

- Bad decisions are made due to a lack of fundamental knowledge
- Risk-taking nature of teenagers regardless of the knowledge of possible consequences



Moving forward

- **Potential Applications:**
 - Improving educational resource allocation regarding high risk behaviors
 - Potential future research focus to study adolescents risk-taking behaviors
- **Future Improvements:**
 - Rigorous model testing, especially in assumptions verifications
 - Higher-level analysis involving machine learning and advanced statistical methods