An Automatic Recommendation System using R

Christopher Byrd – Analytics System Architect - christopher.byrd@ihg.com
An Automatic Multivariate Testing System using R

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Business Need: Relevancy + Maximizing Customer Engagement

Q. How to Optimize Consumer Interactions, with an eMail Application?

- Recommendation System
- Targeting System
- Multivariate Testing
What is Multivariate Testing?

• “True multivariable testing will not only be able to test millions of content variations, it will also be able to determine the impact each individual variable has on conversion, by itself, and in conjunction with other variables.” – Optimost

• “Multivariate testing is a method of experimentation that allows you to test multiple variables simultaneously…” - Google
Thank you for your stay

Dated 5/10/2023

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Got Content? What’s the Optimal Combination?
Why use R?

• “…R would enable us to experiment with the use of multivariate testing, targeting, and recommendation systems all in one programming environment, to meet our business needs.”
Agenda

• How R Fits in the Enterprise?
• Primary Packages used in Multivariate Testing
• Results
Enterprise Framework
Flexible Architecture – Highly Customizable – Session Enabled
xmlTreeParse(doc, useInternal = TRUE)

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    <description>Male Guest Orange Shirt</description>
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  </content>
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    <description>Flower Pillow</description>
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  </content>
</slot>
Primary Packages
AlgDesign – OptFederov and Gen.Factorial Routines

**optFederov(model, data, arg1, ...)**

![Factor Assignment Table](image)

**Design Of Experiments (DOE)**
Results
Multiple Email Versions “in Market”

Thank
Dear LARRY
Thank you &
Express 3
We hope you:
Smart @
With our:
you'll check-in and we'll have you:
Next time: Thank you
Thank you
Thank you
Thank you
Thank you
Thank you
Thank you
Thank you
Thank you

Thank you for Staying Smart ☺

Dear LARRY SEIGMAN,

Thank you for choosing to stay with Holiday Inn Express JACKSONVILLE-SOUTH. We hope you enjoyed your stay and our Simply Smart @ amenities.

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Thank you!

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View destinations.
Results
Champion Challenger Framework

Compile Behavioral Feedback to Determine a Winner per Segment
Results
Preliminary – Open and Click Thru Rates

▲ 20% increase in Opens
▲ 30% increase in Click Thru

“Thank You!”

Winning Combination!