

2019 Teradata Data Challenge Finalist Presentations Session 2

TEAM D6-D10

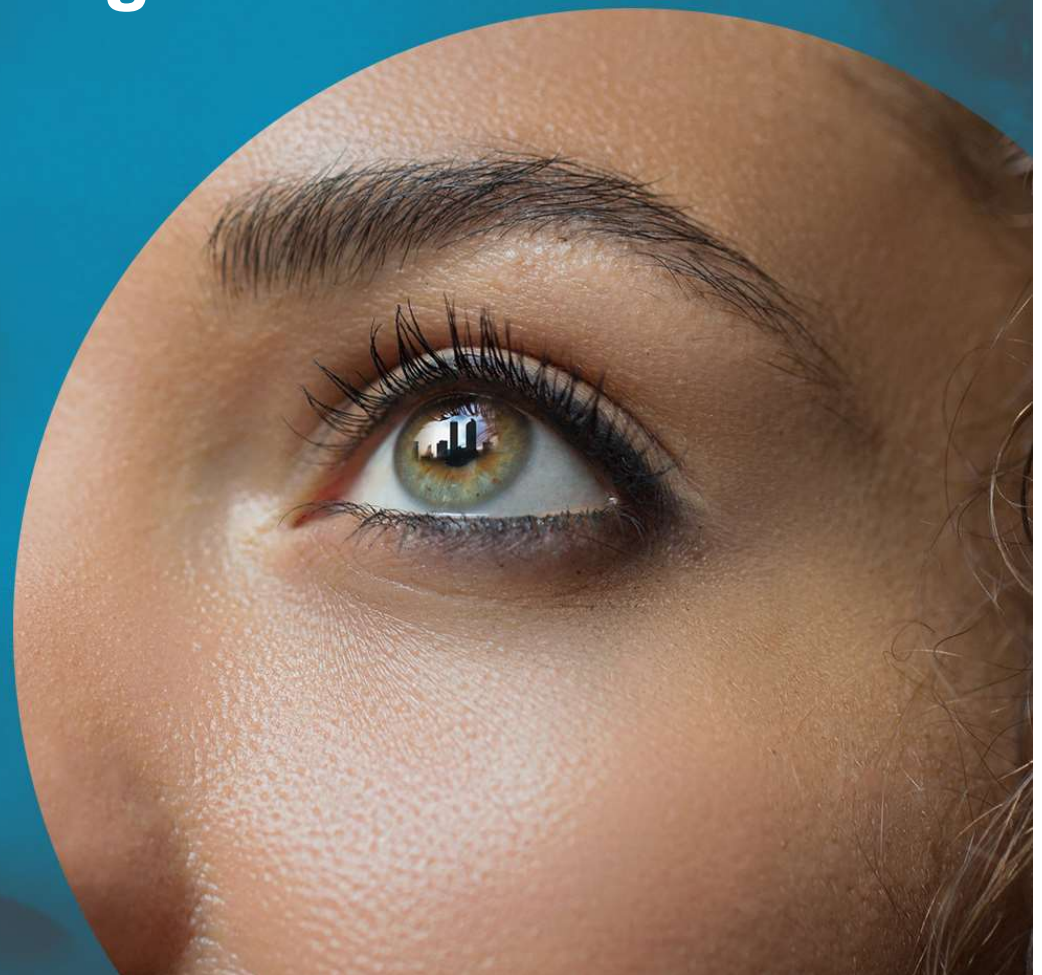
Susan Baskin – Teradata

Jason Dozier – Hire Heroes USA

UNIVERSE

DENVER 2019

teradata.



Format for Session

- Hire Heroes USA Overview
- Finalist Presentations (Team D6-D10)
- Wrap Up

Data Challenge Finalists Session 2

- D6- Cornell College
- D7- UC San Diego
- D8- Western New England University
- D9- NIDA Business School Thailand TEAM 2
- D10- Washington Univ. St. Louis TEAM 2

Hire Heroes USA overview



Jason Dozier
Director of Program Operations

UNIVERSE
— DENVER 2019 —
teradata.



HH HIRE HEROES USA



Empowers U.S. military members, veterans and their spouses to succeed in the workforce through transition workshops, personalized career coaching and employment preparation counseling at NO COST.

Mission: TRANSFORMING MILITARY SERVICE INTO CIVILIAN SUCCESS

Hire Heroes USA provided the student teams with:

- Variety of data sets from multiple technologies
- Business questions for teams to address

Over 30 Submissions from AROUND THE GLOBE!

All reviewed by HH USA and Selection Committee

Thank you.

UNIVERSE
— DENVER 2019 —

©2019 Teradata

D6- USA



Cornell College

Predicting HHUSA Clients Likely to be
Hired Utilizing Demographic Profile

Taylor Axelson, Scott Gasik

Xinyi Li, Yuzhe Zheng

Professor Cindy Bradley

October, 2019

UNIVERSE

DENVER 2019

teradata.



500,000

UNEMPLOYED
VETERANS

&

16,000

ANNUAL CLIENTS
& GROWING



**LIMITED
CAPACITY**
OF TRANSITION
SPECIALISTS

BUSINESS

GOAL

Increase capacity to serve clients while minimizing the number of required transition specialists

ANALYTICS

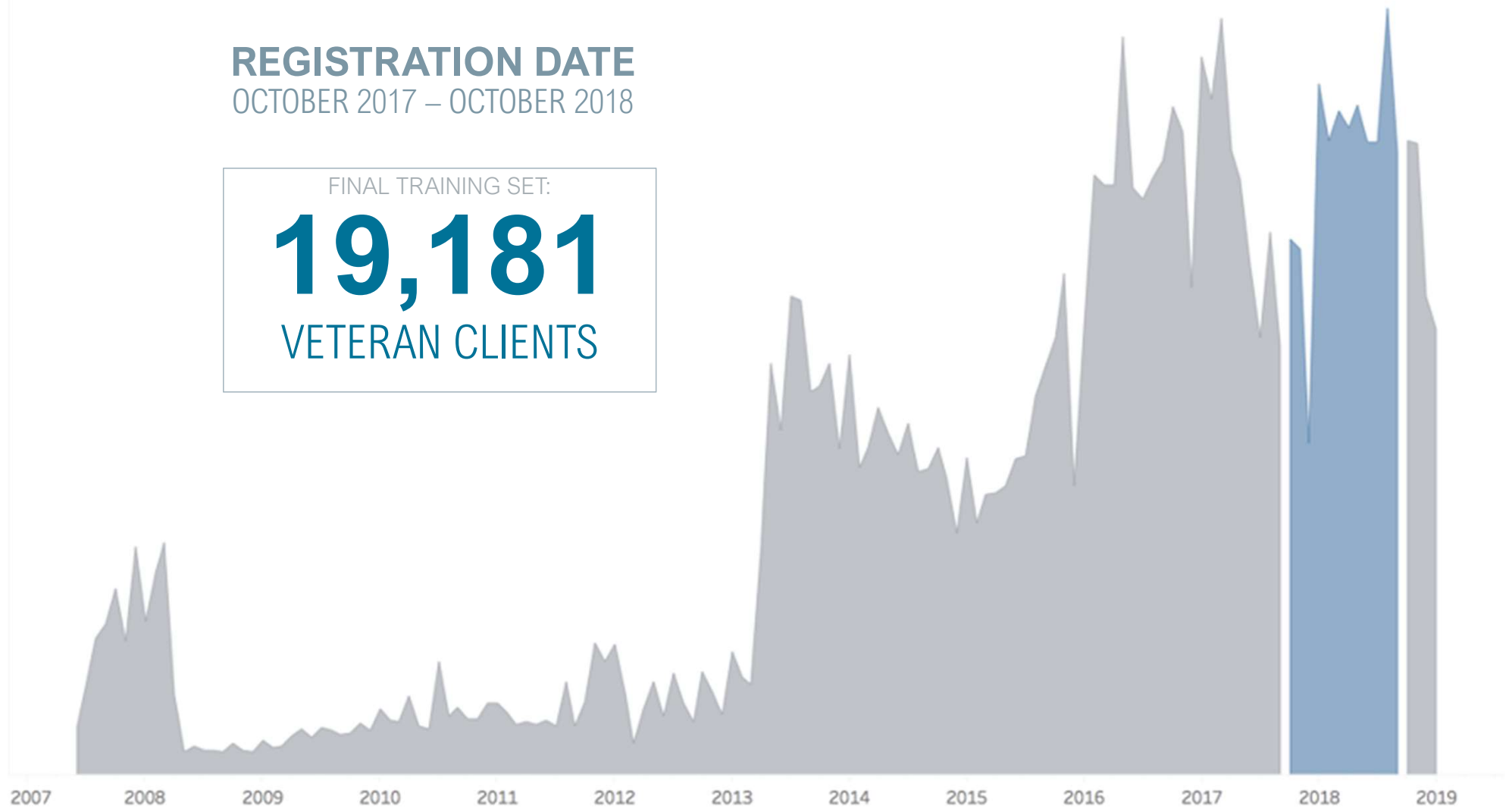
GOAL

Utilize demographic profile to identify clients likely to be hired

REGISTRATION DATE
OCTOBER 2017 – OCTOBER 2018

FINAL TRAINING SET:

19,181
VETERAN CLIENTS



23%

VETERAN CLIENTS
CONFIRMED HIRE

4,643 IN TRAINING SET

60

DEMOGRAPHIC VARIABLES CURRENTLY COLLECTED & AVAILABLE

Dimension Reduction

Completed Based on Analysis Of:

Completeness

Predictability Power

Aggregation of Categories



The screenshot shows the Hire Heroes USA website. At the top is the logo and navigation links: ABOUT, RESULTS, SERVICES, FOR COMPANIES, GET REQUISITED, LOGIN TO MYTRACK, and a red REGISTER NOW button. Below the navigation is the tagline "Transforming Military Service into Civilian Success". A dark blue banner with white text reads "OUR SERVICES" and "Learn > Our Services". The main content area states: "For more than 10 years, our team has excelled at one thing above all others – driving the success of veterans and military families in civilian careers." It then describes their technique and lists three bullet points: "Create a tailored civilian resume that effectively highlights skills and achievements", "Translate military experience into civilian terminology", and "Learn effective job search, networking and interviewing techniques". Below this is a paragraph about the program's availability and a "Registration" section with a link to register for free services. A yellow arrow points from the text "Aggregation of Categories" to the red "REGISTER NOW" button.

MALE CLIENTS HIRED AT A **HIGHER RATE**



32.9%

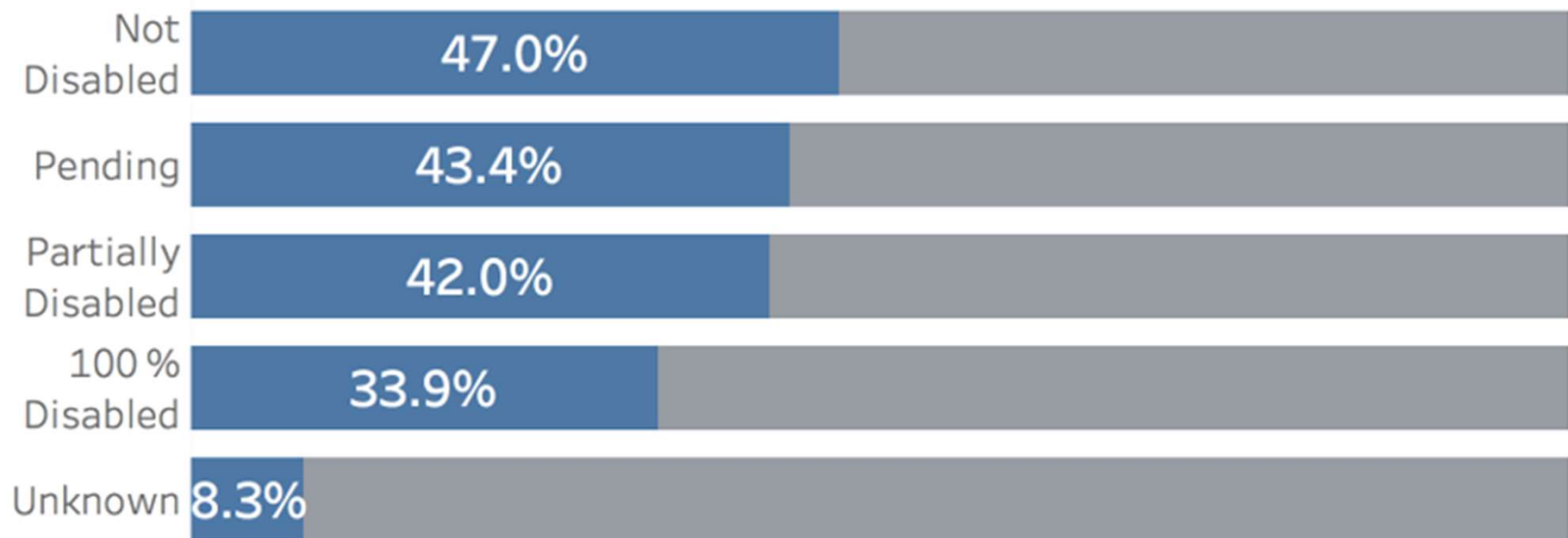


24.7%

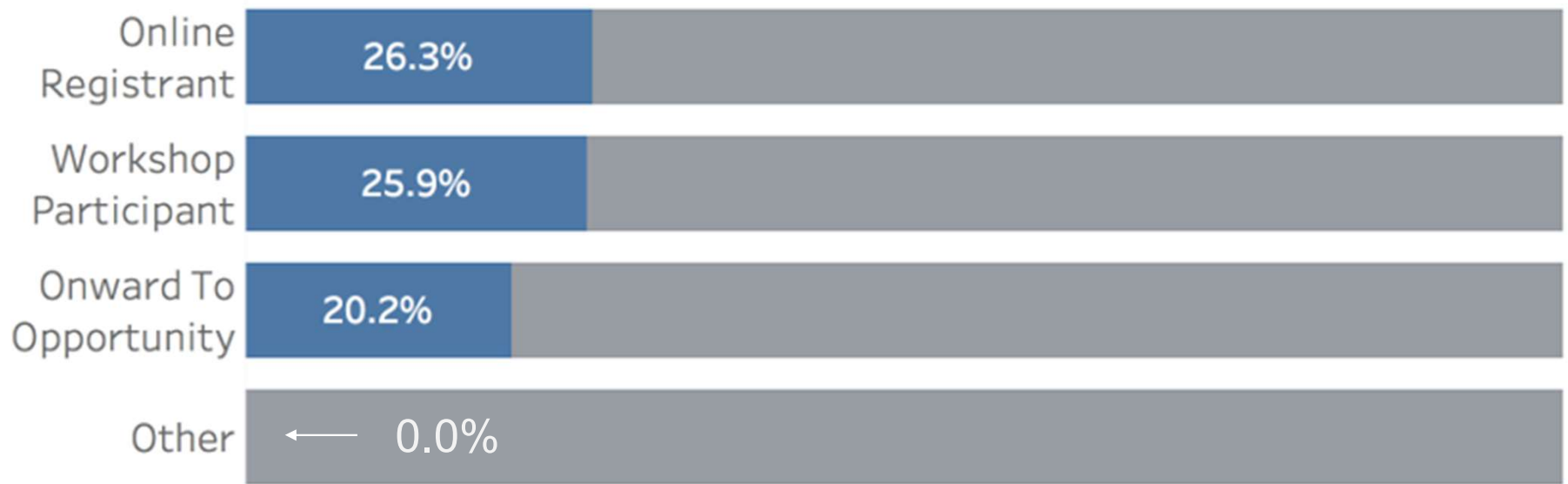
UNKNOWN

← 0.1%

LEVEL OF **DISABILITY** IS A DIFFERENTIATOR OF **HIRE RATE**



HOW CLIENTS ARE **SOURCED** IS A DIFFERENTIATOR OF **HIRE RATE**



MODELING APPROACH

SOFTWARE	R (R STUDIO), XLMINER
MODELS EVALUATED	KNN, CART, LOGISTIC REGRESSION, DISCRIMINANT ANALYSIS, NEURAL NETWORKS
TECHNIQUES	FORWARD & BACKWARD STEPWISE SELECTION
VARIABLES EVALUATED & ELIMINATED	CLEARANCE LEVEL, DESIRED EARNING TYPE, DESIRED STATE, EDUCATION LEVEL, EMPLOYMENT STATUS, HEARD ABOUT, RELOCATE, SERVICE BRANCH
VARIABLES USED IN MODEL	DISABILITY STATUS, GENDER, TYPE OF ENTRY
MODEL SPECIFICATIONS	.5 CUTOFF 60/40 TEST/VALIDATION SPLIT

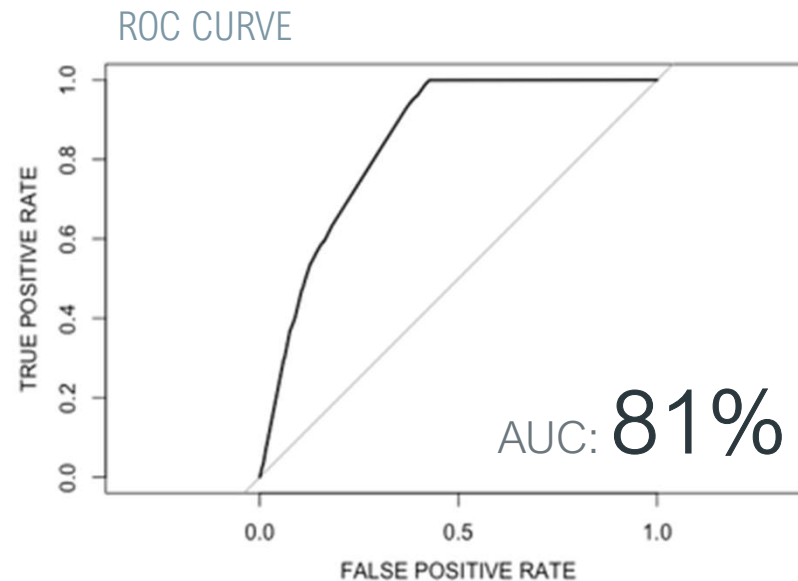
MODELING RESULTS

MODEL: LOGISTIC REGRESSION, .5 CUTOFF, 60/40 VALIDATION SPLIT

VARIABLES: GENDER, TYPE OF ENTRY, DISABILITY STATUS

ERROR RATE: **22%**

	ACTUAL	
	NOT HIRED	HIRED
PREDICTED NOT HIRED	5,731	1,597
PREDICTED HIRED	148	196



BUSINESS VALUE

PROVIDE A **FAST TRACK** FOR CLIENTS
PREDICTED LIKELY TO BE HIRED

Fast track provides fewer touchpoints with a transition specialist



Increase capacity of limited transition specialist resources



Provide clients less likely to be hired specialized attention



Increase clients hired

Thank you.

UNIVERSE
— DENVER 2019 —

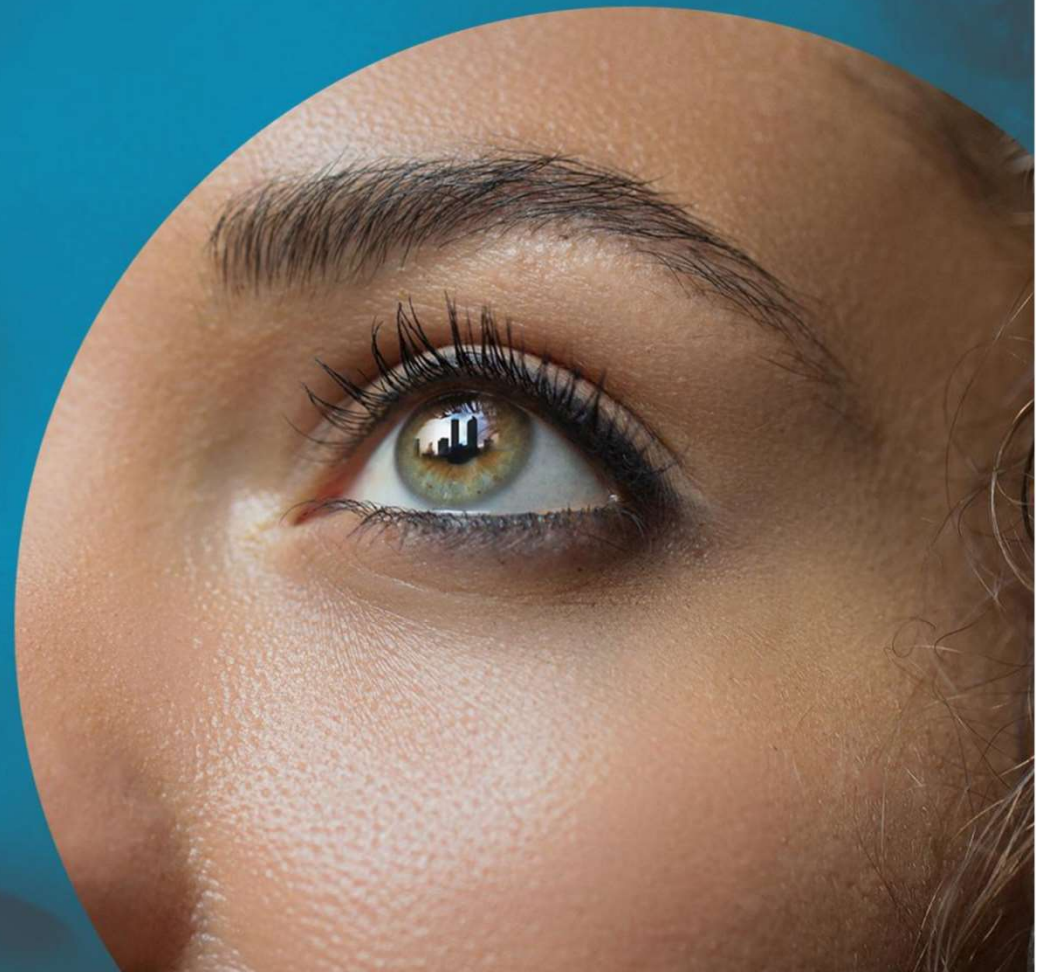
©2019 Teradata

D7- UC San Diego USA

UC More Hires

1 Cheng Gong, Jinrong Gong, Cheng Shen,
Zheng Hao Tang, Yujie Xu
October, 2019

UNIVERSE
— DENVER 2019 —
teradata.



Slide 19

1 TODO: I guess not every one is going to present?
Cheng Shen, 8/31/2019

1 Rock paper scissors
Cheng Gong, 8/31/2019

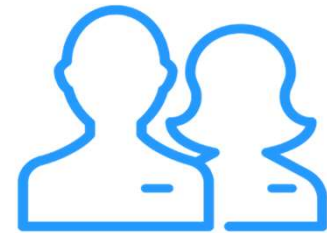
Agenda



Client
Services



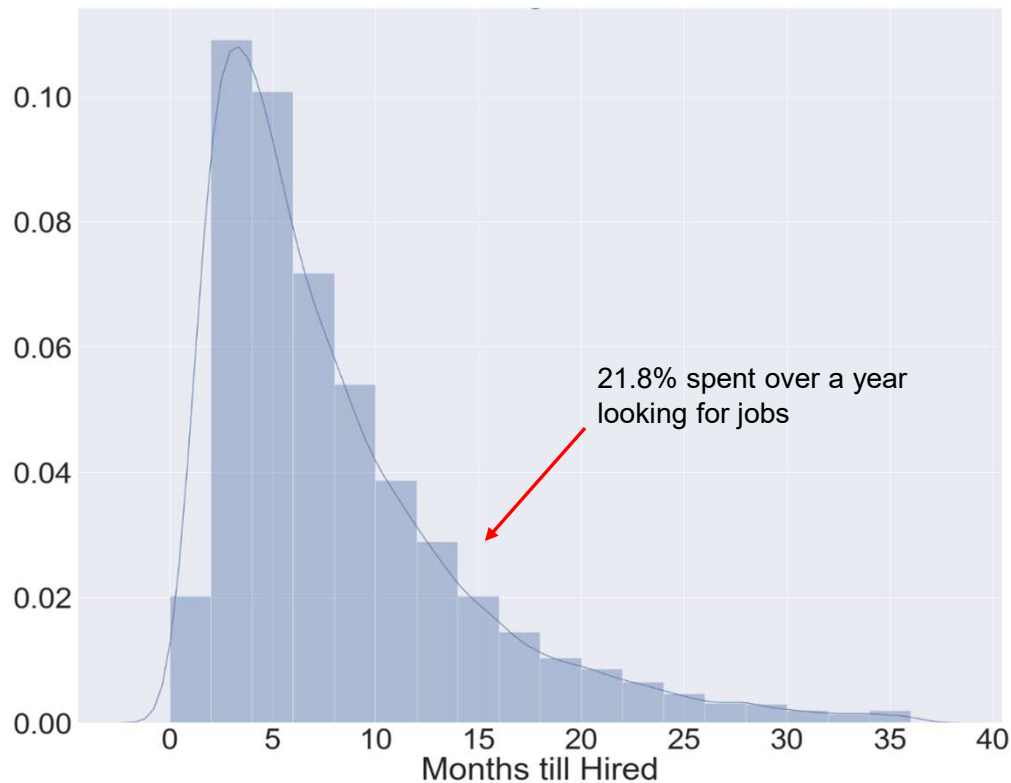
Volunteer
Services



Spouse
Program

Client Services

ML Model prediction on time cost of clients' job placement



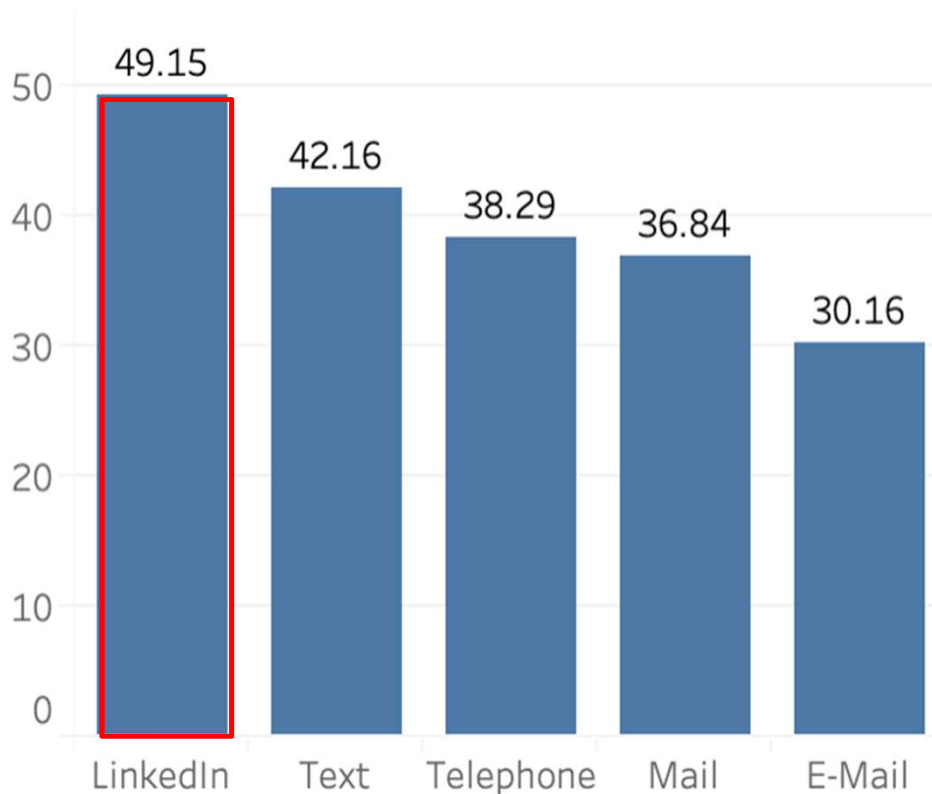
Months	Accuracy
≤ 1	38.186%
≤ 2	47.355%
≤ 3	63.973%
≤ 4	75.405%
≤ 5	81.625%
≤ 6	85.409%

The prediction accuracy **within**
given months

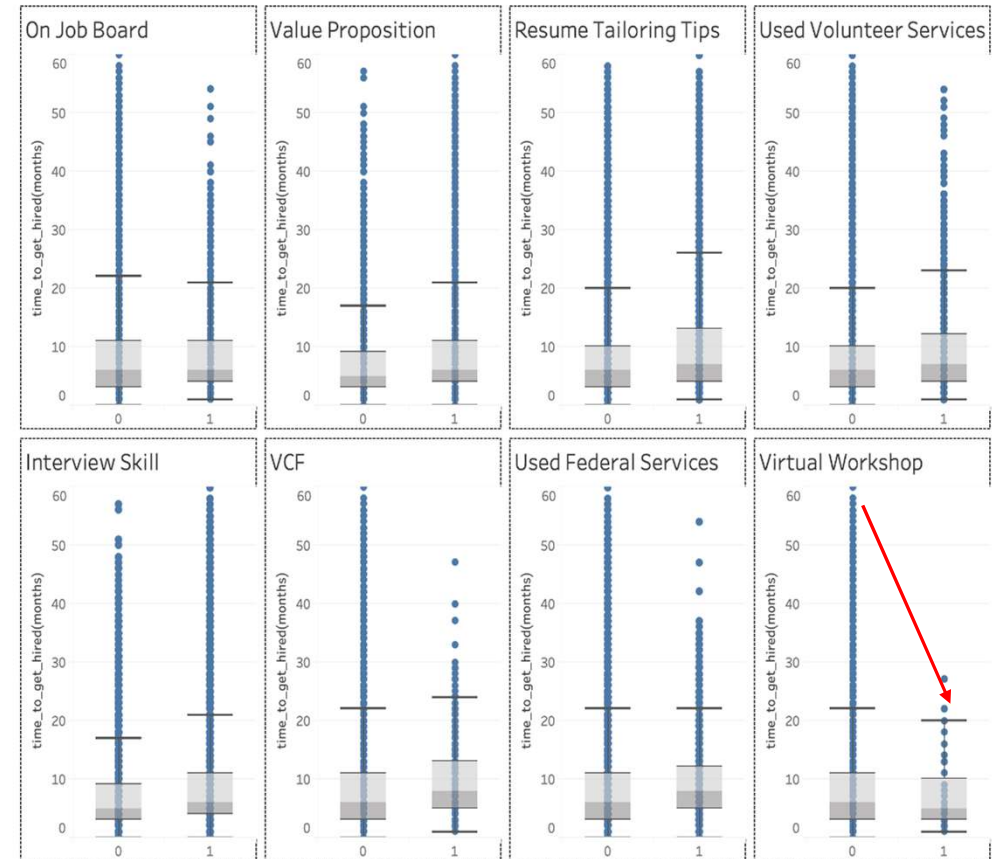
UNIVERSE
DENVER 2019

Client Services

Preferred Contact & Effective Services



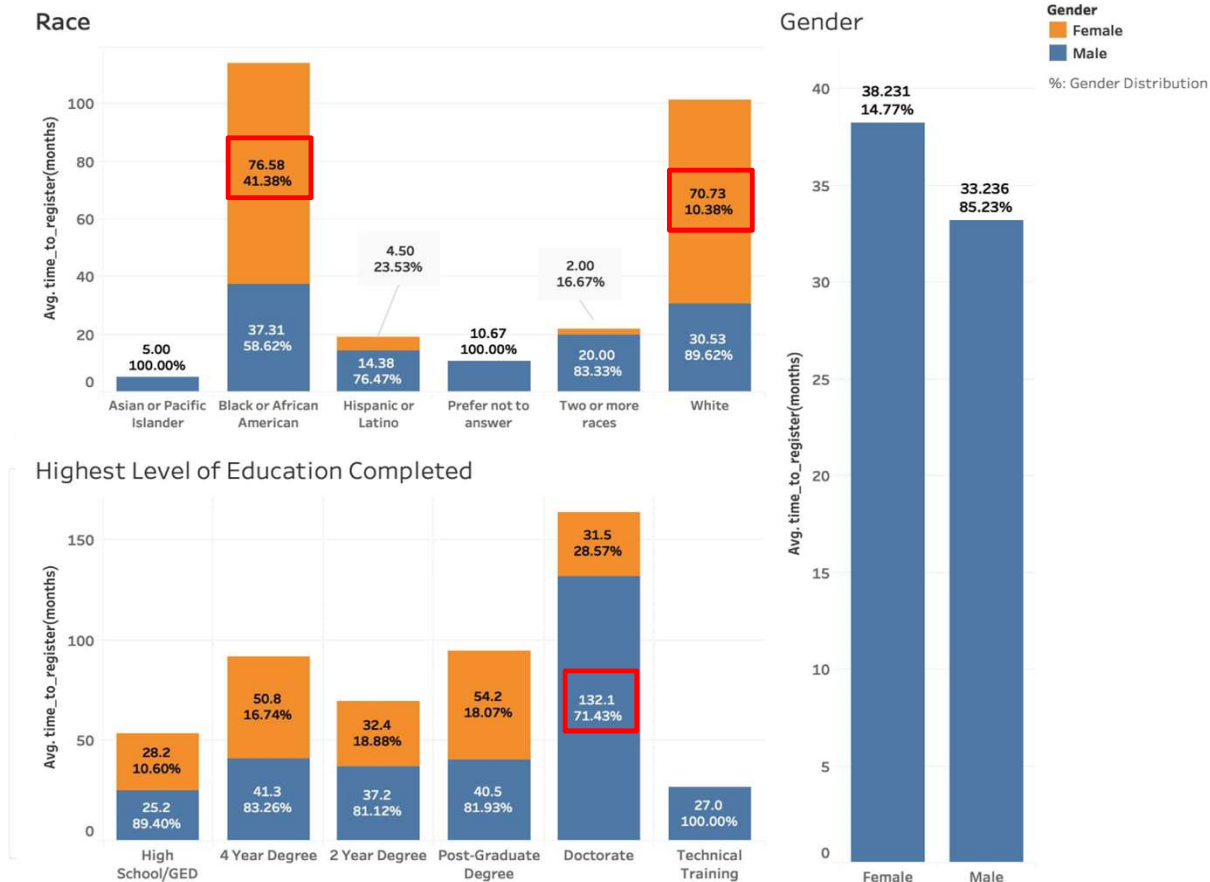
% hired among each Preferred Contact Method



The boxplots on time to get hired vs whether the client participates in a services

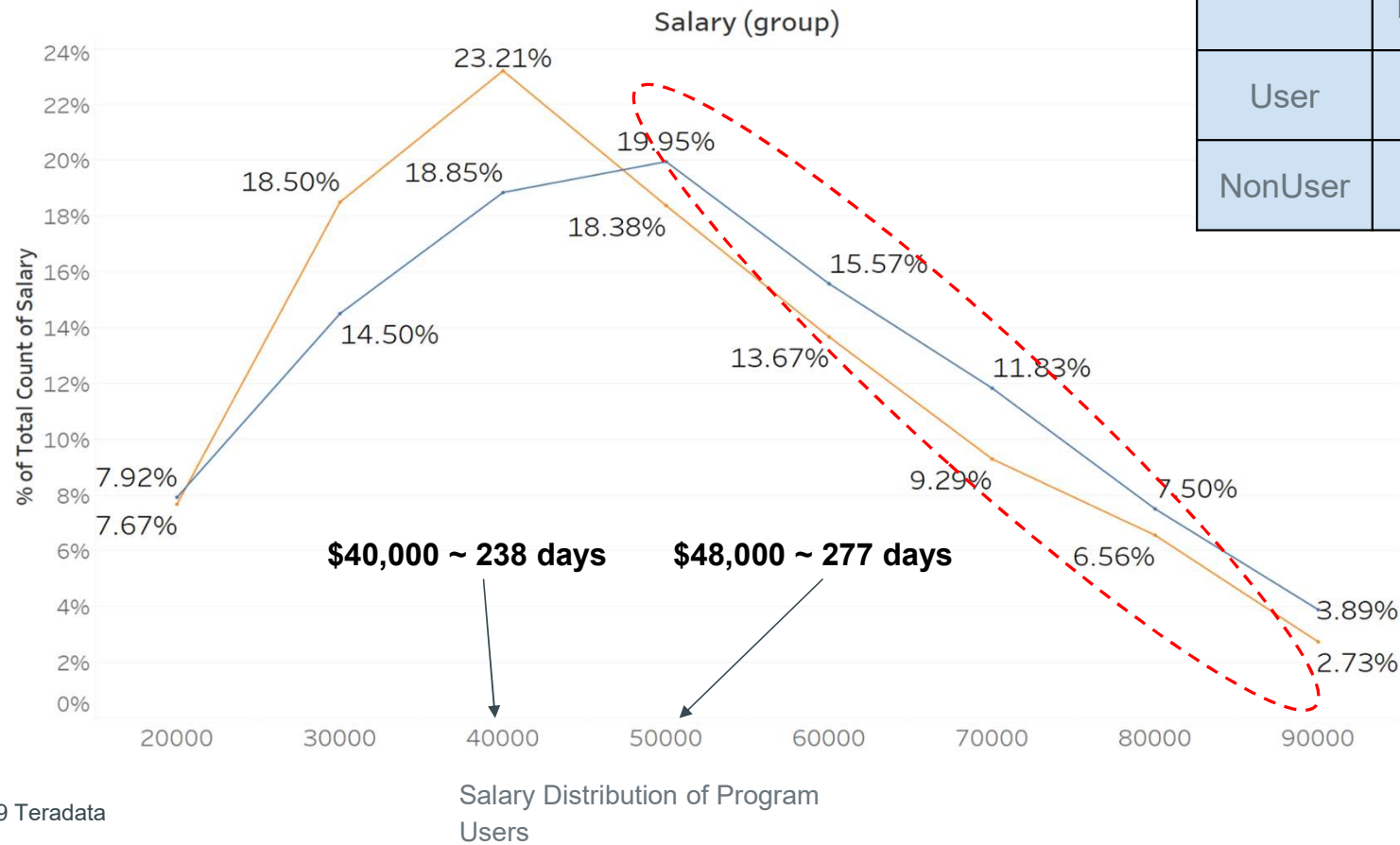
Client Services

Registration time for HH service among different demographic groups.



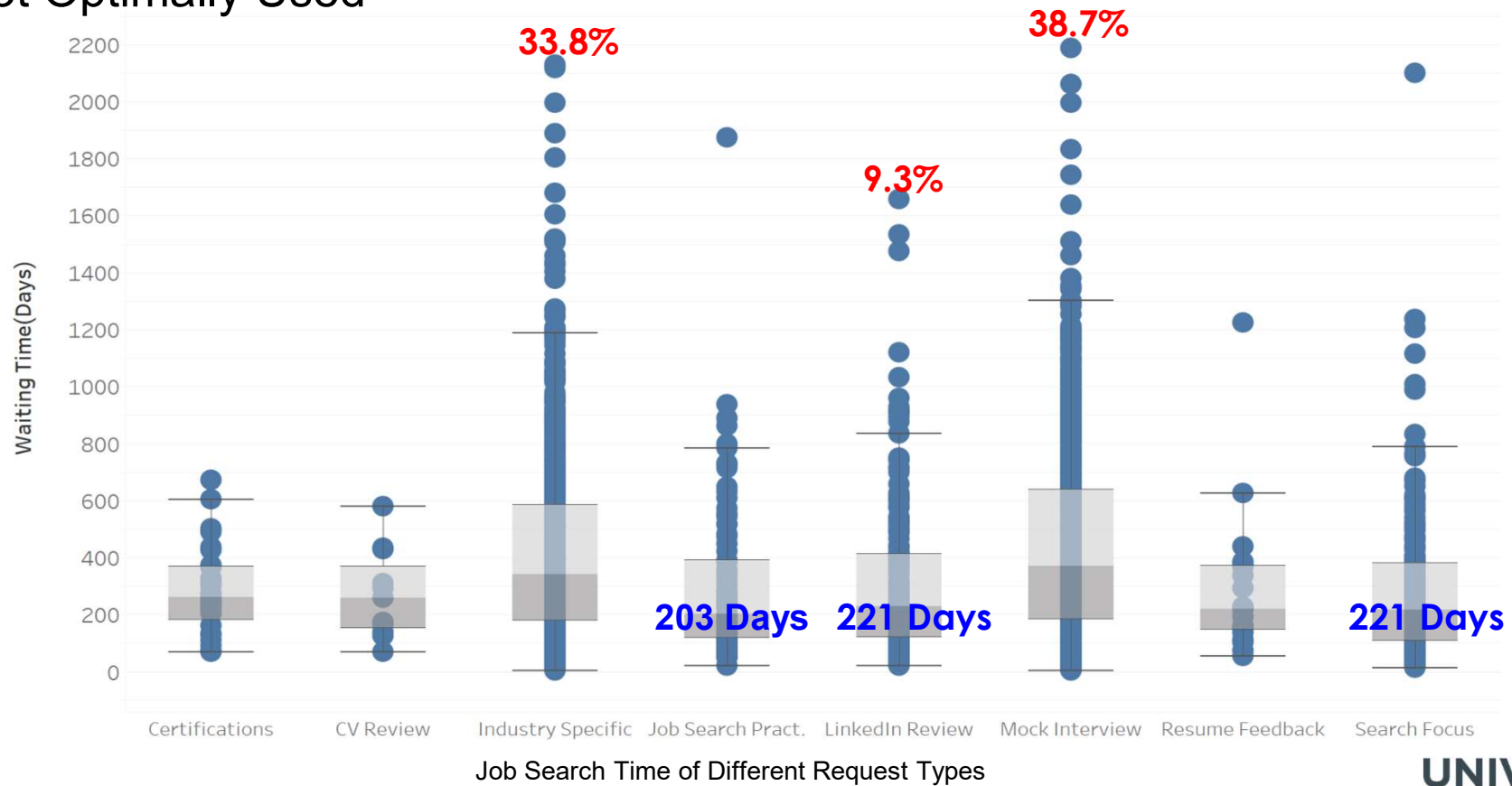
Volunteer Program

Better Search Process & Results



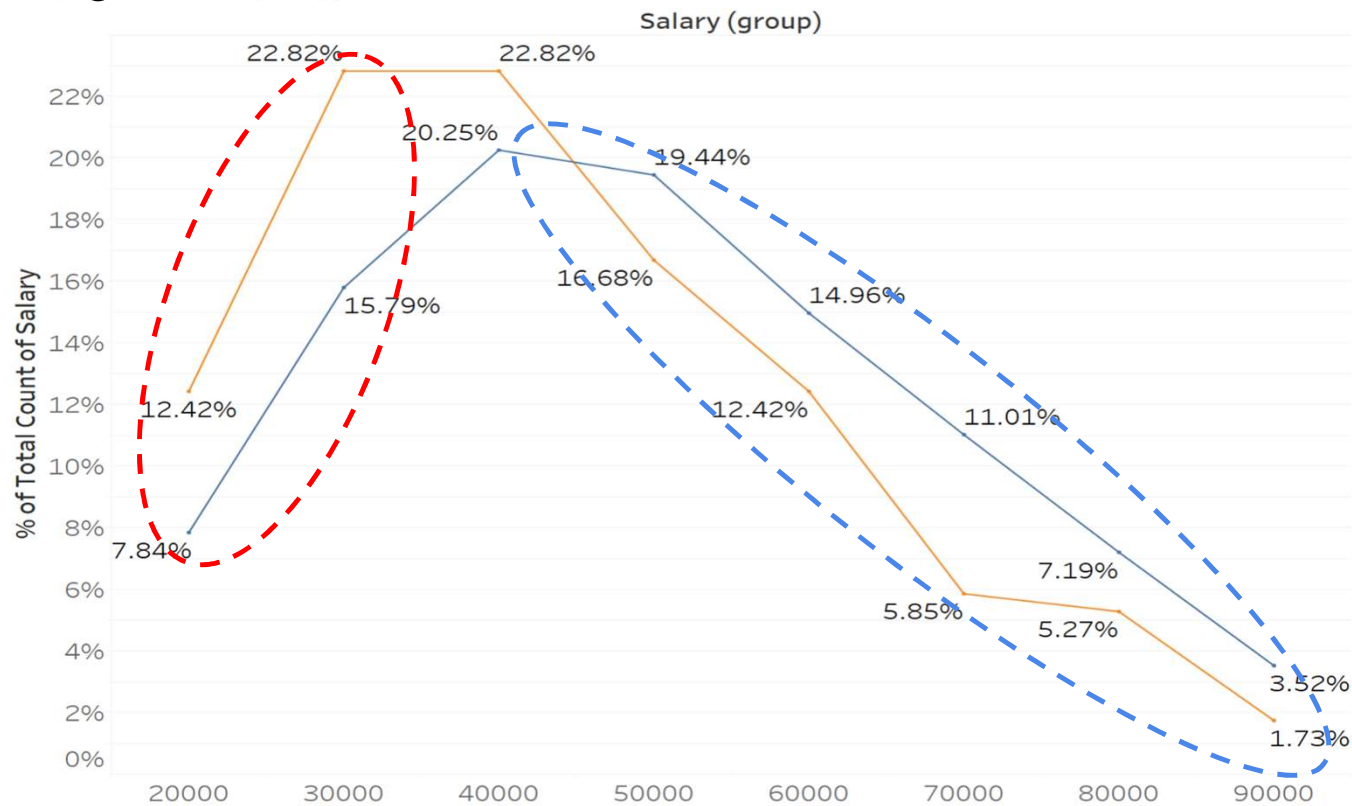
Volunteer Program

Not Optimally Used



Post-Hire Requests

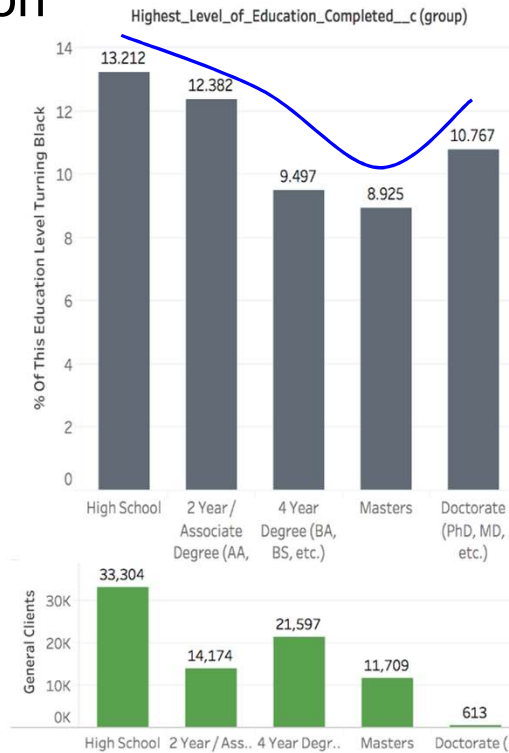
Looking for Higher Salaries



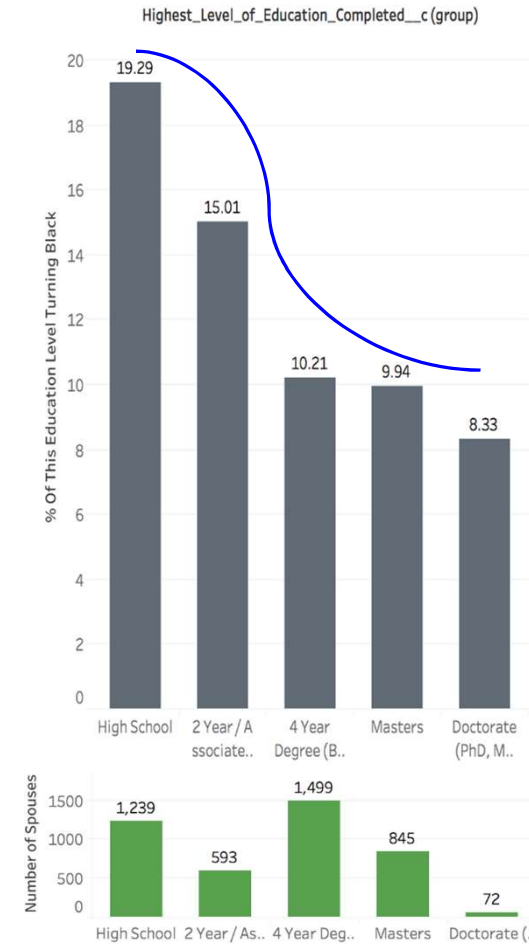
Serving Spouse Program

Effect of Education

Grey Figures: **Turn-Black Rate**
in each Education Level



Veterans

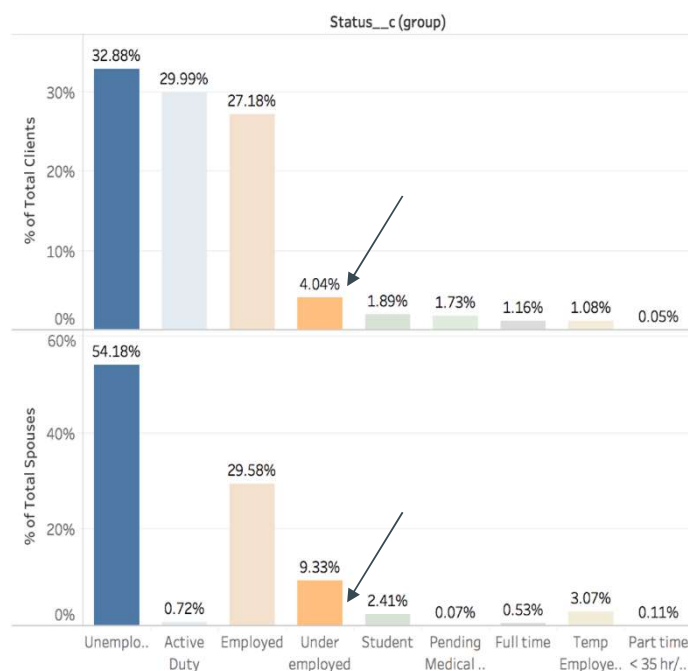


Spouses

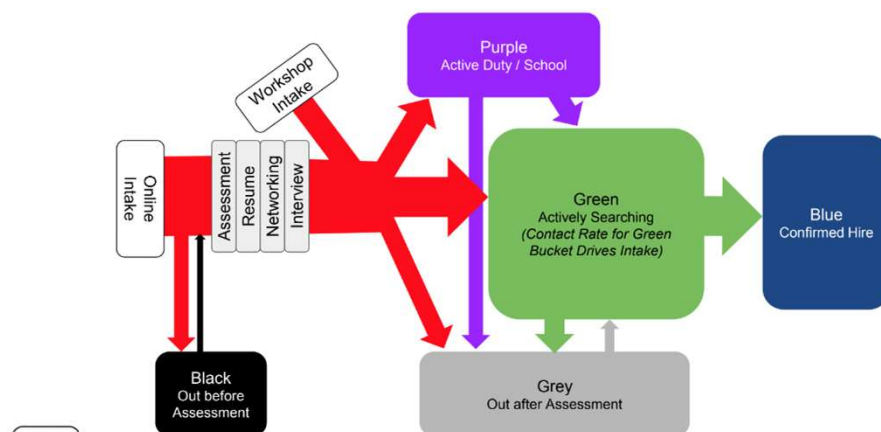
Green Figures: **Population**
in each Education Level

Serving Spouse Program

Employment Improvement



Population Across Employment Status



Veterans

Spouses

Status__c (group) 1	z	A	Total	Turned Blue	Turned Grey	Turned Black	Turned Green	Turned Purple
Unemployed			27,163	6,952	7,438	4,015	12,164	1,524
Under Employed			3,218	976 < 1,042		532	1,862	211
Temporary/Contract Employee			829	257 < 205		111	445	70
Employed			23,147	8,283	4,747	2,693	10,601	2,591
Active Duty			27,000	9,079	7,722	2,806	14,206	11,326

Status__c (group) 1	z	A	Total	Turned Blue	Turned Grey	Turned Black	Turned Green	Turned Purple
Unemployed			2,469	818 > 718		394	1,597	226
Under Employed			425	114 > 109		84	255	39
Temporary/Contract Employee			140	34	25	26	76	10
Employed			1,348	480	365	158	819	155
Active Duty			33	4	28	0	21	27

Employment Status (Color) Change

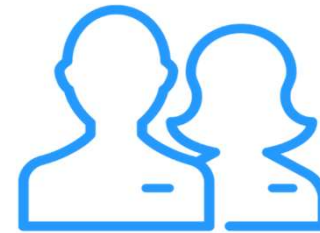
Conclusion



Client
Demographics
affects the outcome



Volunteer
Services
are effective



Spouse
Program
helps employment

Thank you.

THANK YOU
TO ALL

©2019 Teradata

D8- Western New England Univ. USA

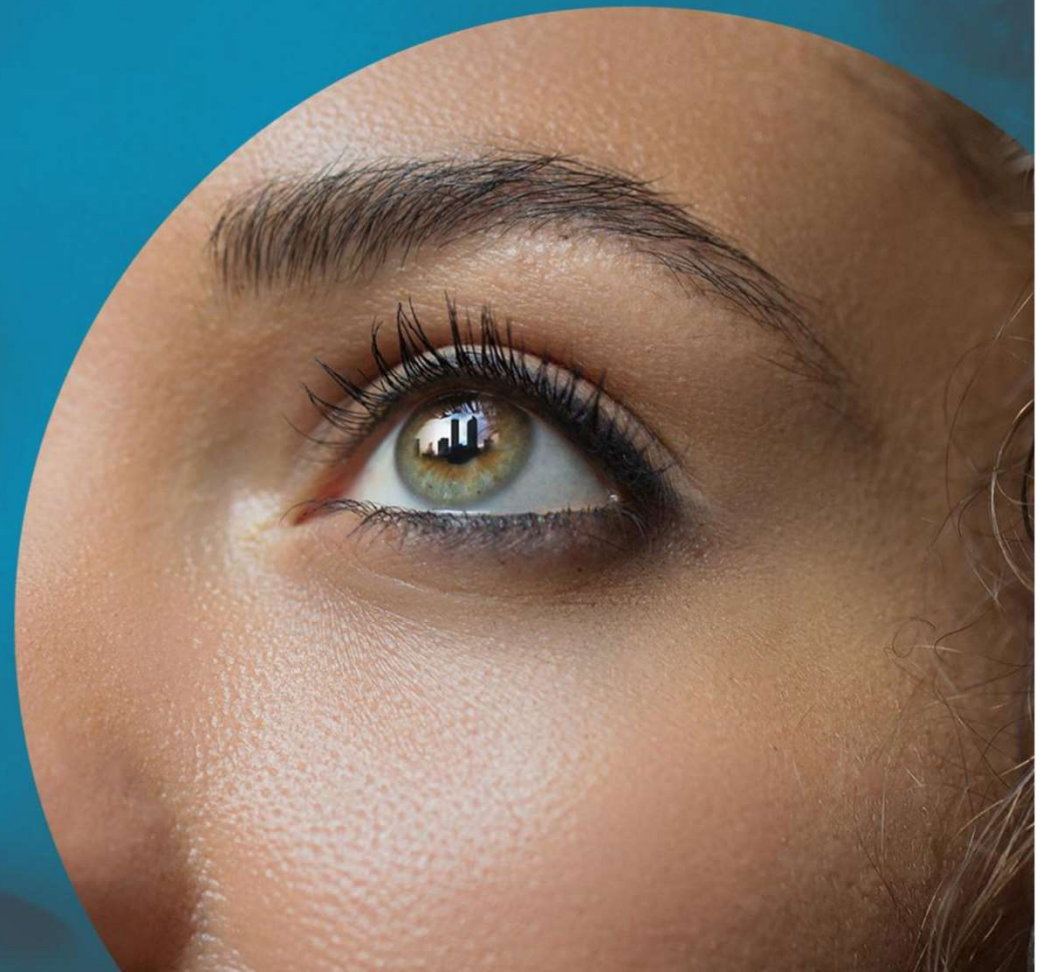
Anthony Barile
Chad Parent

October, 2019

UNIVERSE

DENVER 2019

teradata.



Agenda

- Introduction, Problem, and Objective
- Approach
- Market Research and Segmentation
- Recommendations

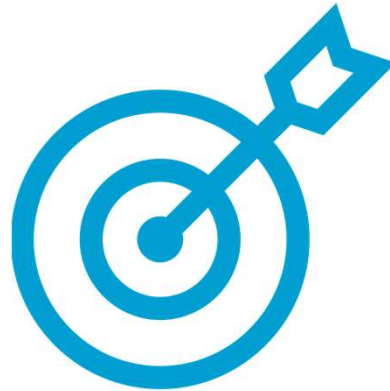


Introduction

Problem and Objective

- Question

Do email campaigns have any effect on job seekers creating profiles on the Hire Heroes USA Job Board?



- Objective

Increase email interaction (signups and donations) 5% in 3 months

Approach

Data and Tools

Tools



- Calculations, data visualization, chart creation



- External veteran labor statistics

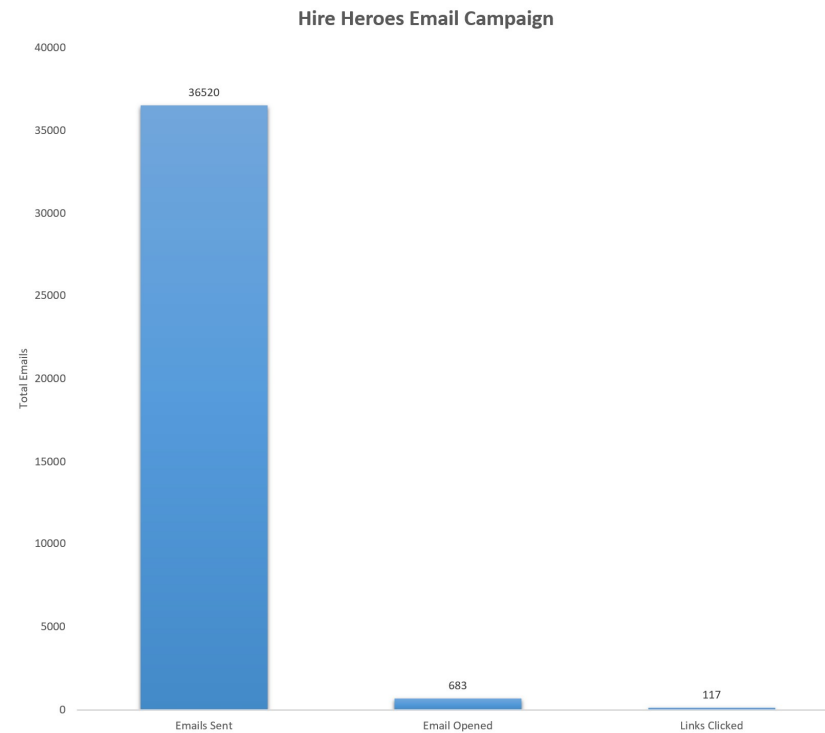


- Data visualization, chart creation

Findings

Market Research

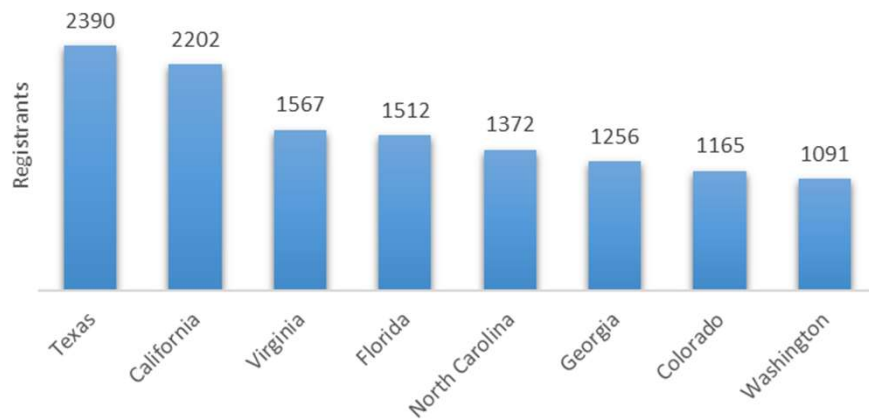
- Hire Heroes email campaigns have little effect on profile creation on job boards
- In 13 months 36,520 emails were sent
- 683 of these emails were opened
- 117 clicked links



Market Segmentation

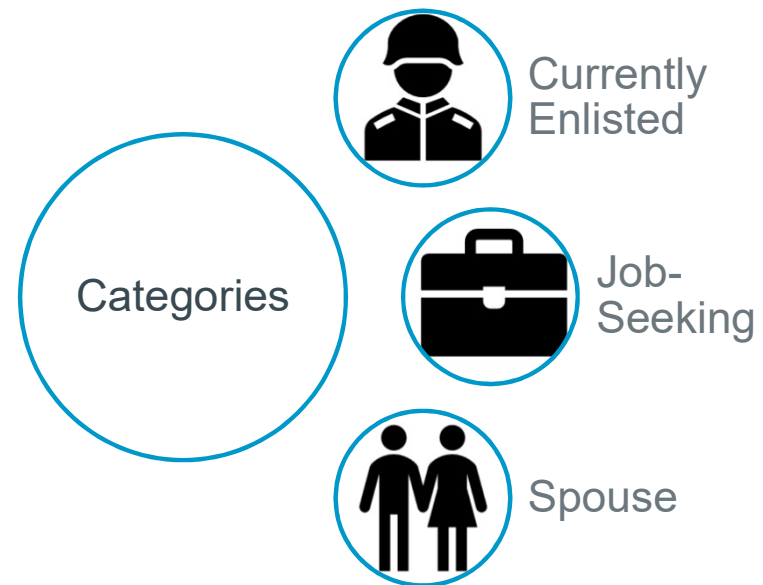
Target Market

Registrants by State



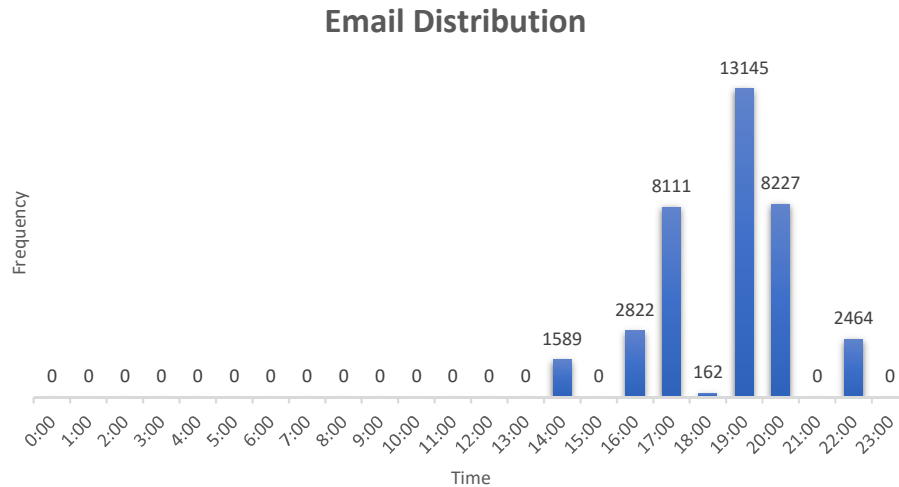
Creative Strategies and Promotional Tactics

- Pull Strategy
 - Build Trust with potential clients
 - Generate leads for future users of the service
- Target Email campaigns to demographically segmented mailing lists
- Only mail those who have Opted-In
 - Categorize recipients when they sign up for the email list



Media Plan

Revamp of email campaign



- Redesign email layout to better catch eye of recipient
- Highest click and open rate is weekend mornings
- Focus email distribution to 10am-12pm

Secondary Media Plan

Job Fair

- Additional Donations-Geared Offering
 - Incentivize Profile Registration by offering access to client-based local job fairs
 - In order to gain access to the fair, attendees must input emails to mailing list
 - Location: Western New England University-coordinated with local ROTC program
 - Can be replicated in other markets
- Florida-based companies that are actively hiring vets who might sign up for the job fair & who already associate with Hire Heroes



Thank you.

THANK YOU
TO ALL

©2019 Teradata

D9- NIDA Business School Thailand

Data Empowerment of HHUSA

Veerut Pathsuwan (Presenter)

Natee Panomchokpisa

Krittitora Sanguanchart

Dr. Jongsawas Chongwatpol (Academic Advisor)

October 20, 2019

UNIVERSE

DENVER 2019

teradata.



Agenda

- Challenge & Motivation

Client Services: Why client who have been hired but are still looking for a new job ?

Volunteer Services: Why volunteer activities are effective in increasing the chance for clients to be hired?

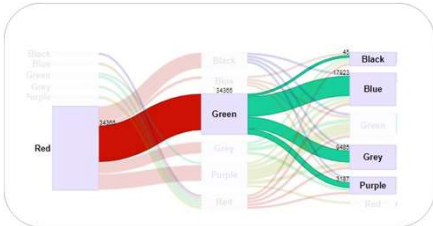
Donors: Which donor and special contribution campaigns effectively increase donations?

- Approach

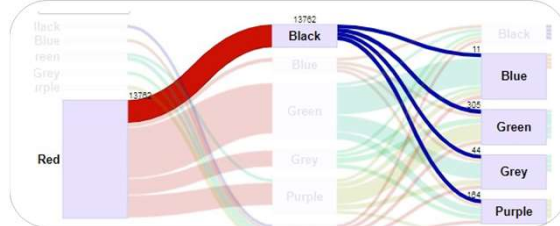
- Recommendations

HHUSA'S CLIENTS FLOW ANALYSIS

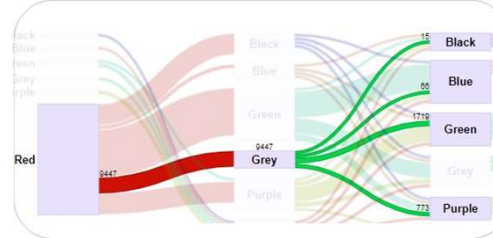
Red -> Green (34,365)



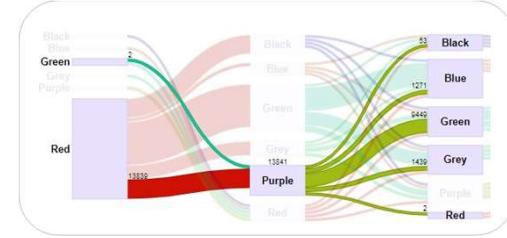
Red -> Black (13,762)



Red -> Grey (9,447)



Red -> Purple (13,841)



Red -> Other (30,640)

Drop off 11%

Black -> Other,

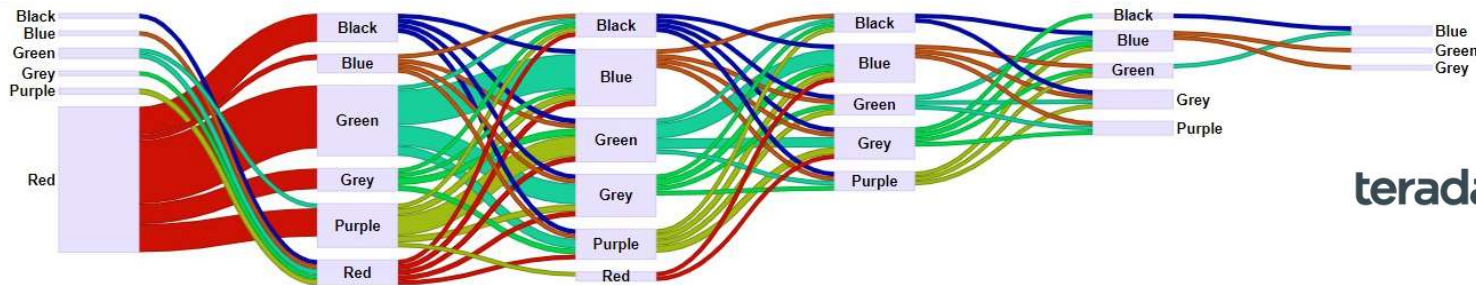
Comeback 4%, Drop off 96%

Grey -> Other,

Comeback 27%, Drop off 73%

Purple -> Other

Comeback (Turn to Green) 68%,
Drop off 12%

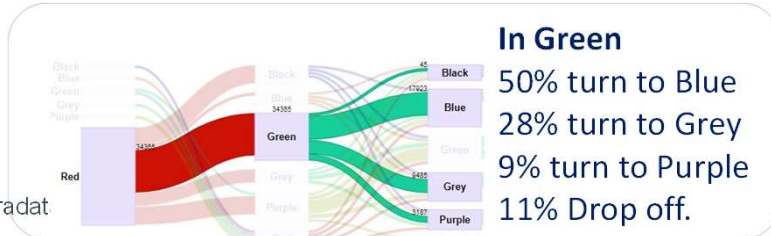


teradata.

Blue Status or Confirmed Hire

Green -> Blue

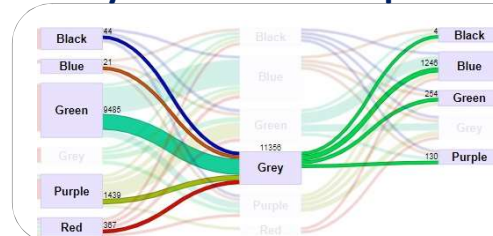
17,923



In Green

50% turn to Blue
28% turn to Grey
9% turn to Purple
11% Drop off.

Grey Status or Unresponsive

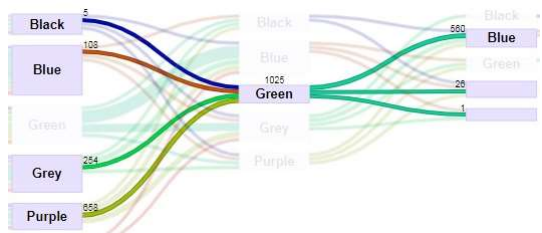


Grey -> Other

Comeback 14% &
Drop off 86%

UNIVERSE
DENVER 2019

Clients who have been hired but are still looking for a new job



There are Multiple HHUSA Hires. These clients have been successfully accepted more than one job.

Unhappiness Index

$$\text{Unhappiness Index} = \text{Logit Score (Y=1)}$$

Unhappiness index = Logit (Hired but still and looking job =1)
 = - 0.2968 +...+ 0.014(Age) +...
 + 0.25(Client request volunteer)

Y = 1 → a client, who already has the “confirmed hire” status, is still looking for a new job

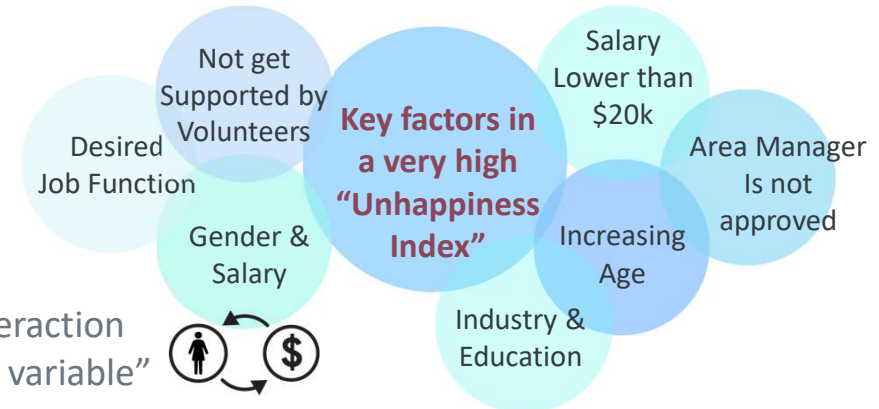
Y = 0 → a client, who is satisfied with the job offered



Business Performance Management (BPM) Layer



“Interaction effect variable”



Opportunity loss from client dissatisfaction

$$OL = UI \times ER$$

OL = Opportunity Loss

UI = Unhappiness Index

ER = Expected Revenue for Each Campaign



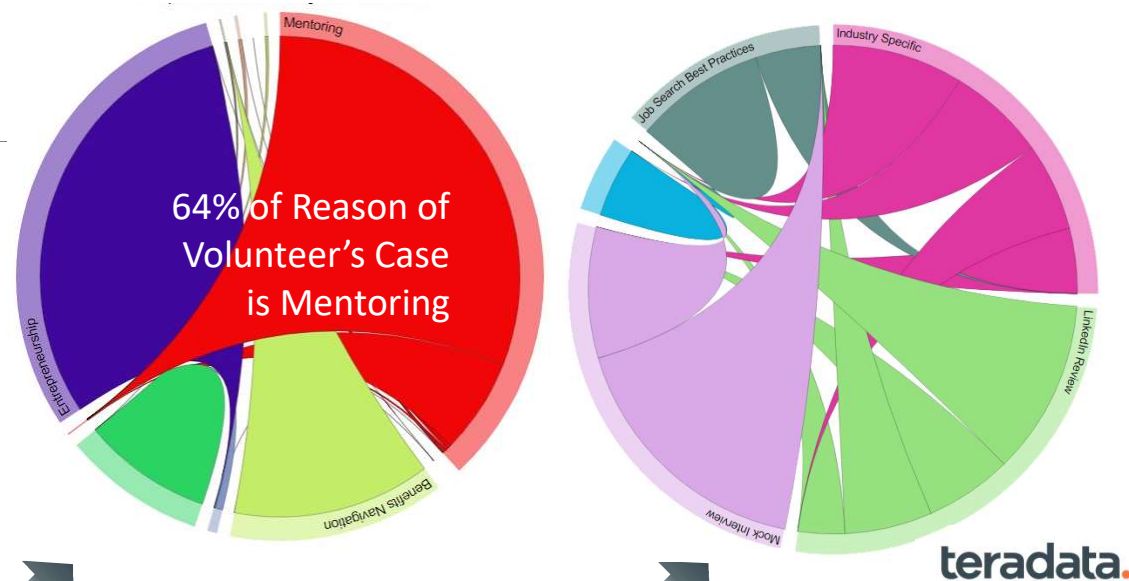
UNIVERSE
DENVER 2019

Volunteer Services

The quantity of volunteers does not matter but activities do matter!

Useful and needed activities for clients

- Resume Tailoring
- Interviewing Skills
- Mentoring



Volunteer Analysis

Volunteer Case Analysis

Top 5 Volunteers Make Case

Most of Volunteer Profiles

Service Supports Requested by Client

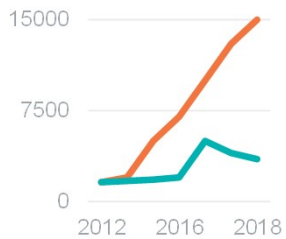
Volunteer Weakness & Strength

Most of clients would like volunteers to mentor about

1. Job-Industry specification
2. LinkedIn Review

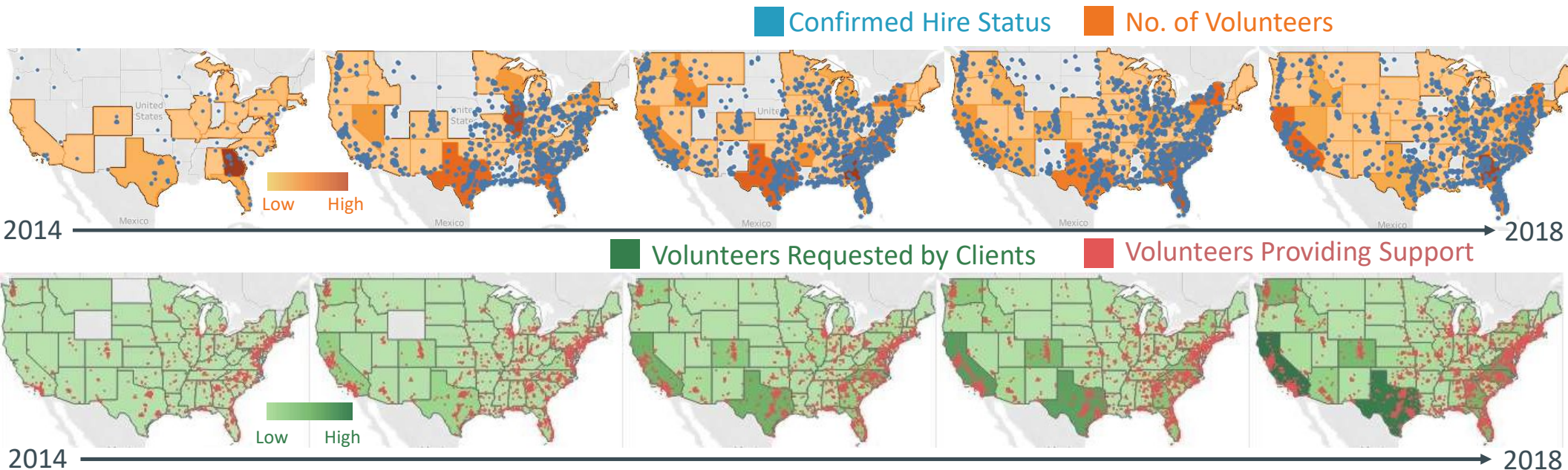


Calling is the most effect way to communicate with its clients.



■ No. of Clients with Confirmed Hire
■ No. of Volunteers

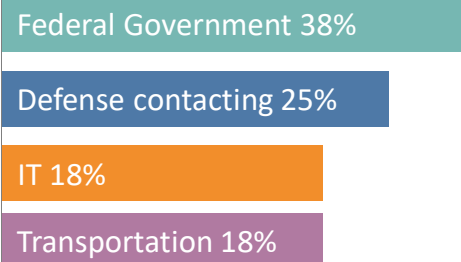
Approach



No. of clients seeking for employment in each industry.



Analyzing "Client Survey" Using Text Mining



Volunteer Strength & Weakness

No. of volunteers providing support and
No. of clients seeking for
employment in each industry.



■ Defense Contacting Requested

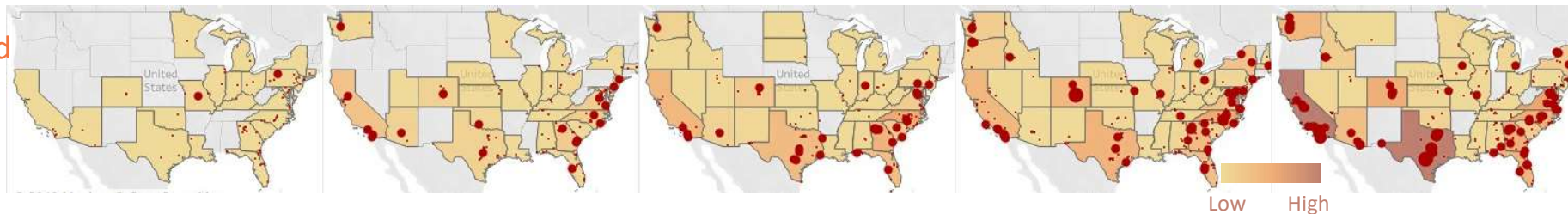
● No. of Volunteers Providing Support

Strength: Defense Contacting, IT

Weakness: Transportation,
Federal Government



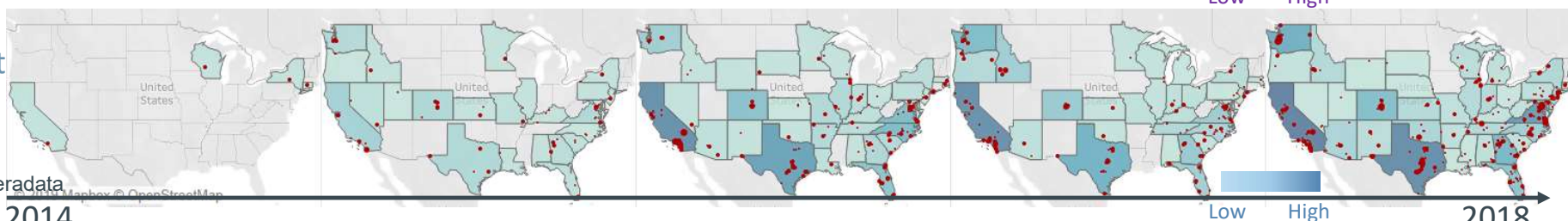
■ IT Requested



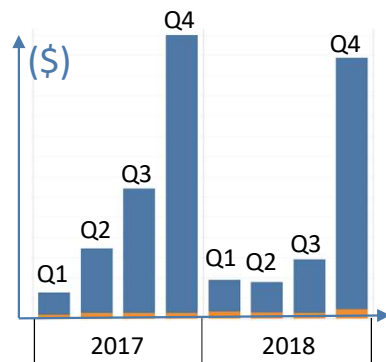
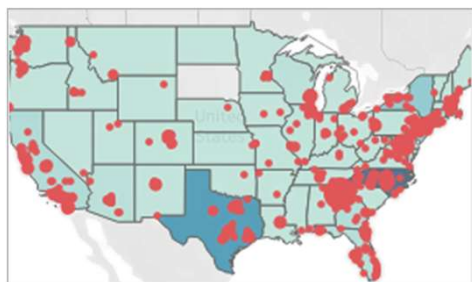
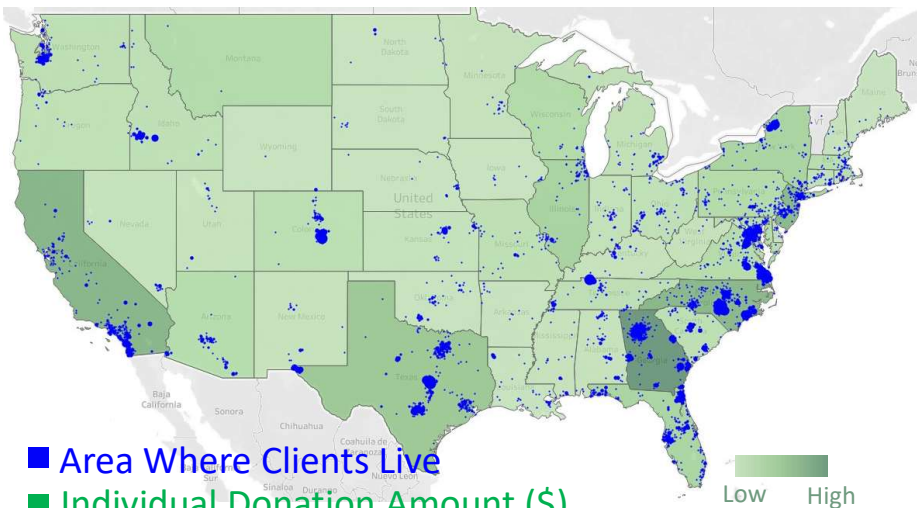
■ Transportation Requested



■ Federal Government Requested



Donors Analysis



RFM Analysis

The 2 Most-Valuable Segments of Donors	Recency	Frequency	Monetary
<u>One-time Donor</u> No. of one-time donors increase every year	Recently	Once	Large Amount
<u>Recurring Donor</u> Avg. recurring donation amounts increases every year.	Recently	Monthly	Small Amount



RDLV = Sum of Recurring Donation Values (2016 – 2018)

Recur. Donation Value 2016

= \$26 x Recurring donors in 2016

Recur. Donation Value 2017

= (\$26 x Current Donors from 2016)

+ (\$46 x New Donors in 2017)

Recur. Donation Value 2018

= (\$46 x Current Donors from 2017)

+ (\$55 x New Donors in 2018)

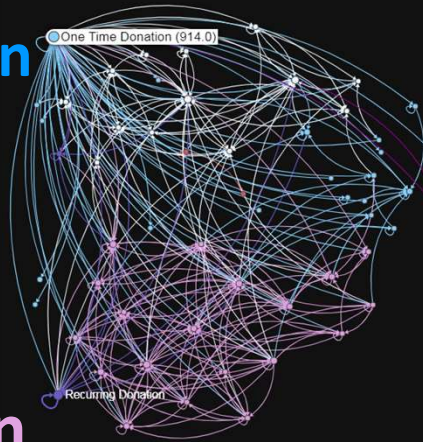
The Most Valuable Donors
Recurring Donation Lifetime Value (RDLV) From 2016-2018
= \$74,442

UNIVERSE
DENVER 2019

Influencer Analysis by Teradata

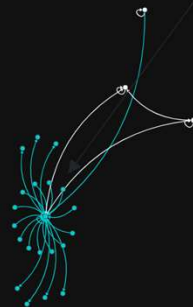
One Time Donation

One-time donations are the main source of money and most of the campaigns only lead to one-time donations

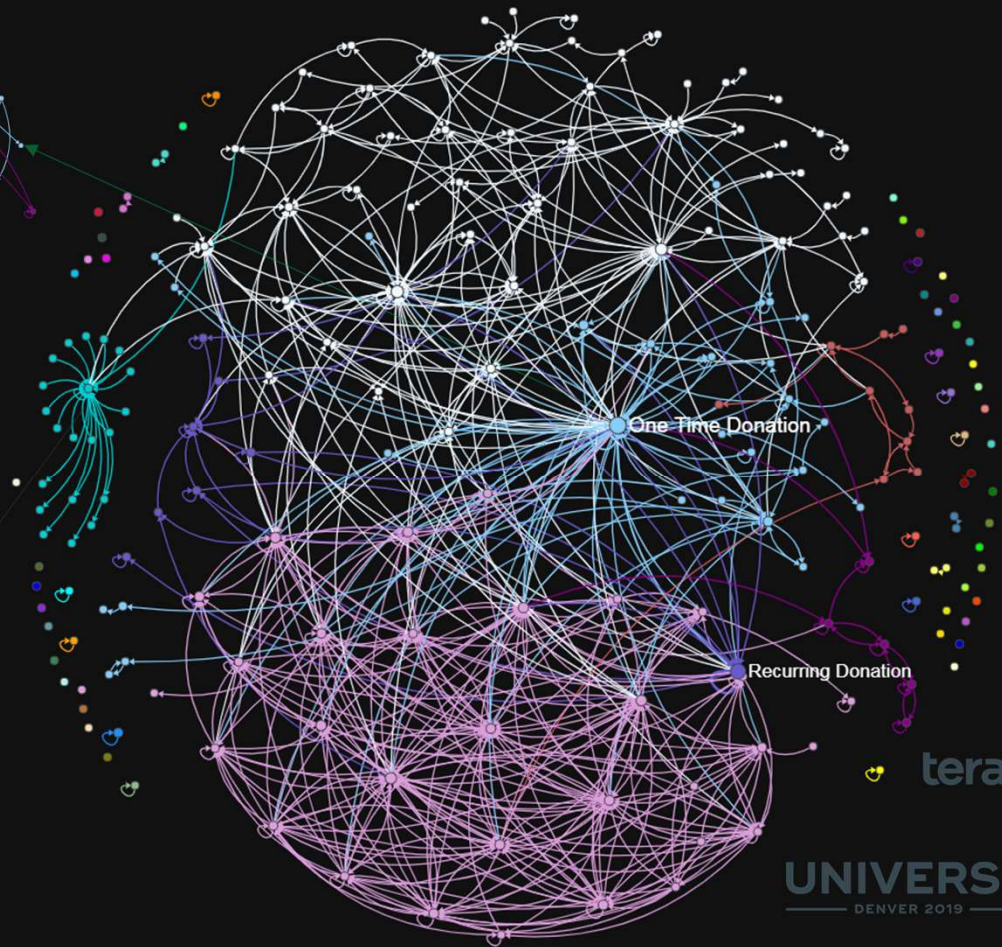


Recurring Donation

The total recurring donation amounts are relatively less than the one-time donation amounts



Veterans Day Challenge
With Influencers



teradata.

UNIVERSE
DENVER 2019

Recommendations

Short Term Strategies



Skills, certifications, or experiences.

- Training and workshop programs with highly responsive volunteers.
- E-Learning Platform (HHELP).



Volunteer Services

- Improve volunteer skills such as interview techniques, resume tailoring, and mentoring their clients.



Opportunities & Development

- Promoting more campaigns to raise funds such as Marine Crops Marathon, Golf Events, and Veterans Day Challenge.

Recommendations

Long Term Strategies



Increasing customer satisfaction

- Providing suitable and desired jobs for clients by using our unhappiness index model which is able to predict client dissatisfaction.



Word Of Mouth

- Focusing more on the word-of-mouth communication.



Opportunities & Development

- Maintaining valuable funding partners such as Call of Duty Endowment, and Walmart Foundation

Thank you.

UNIVERSE
— DENVER 2019 —

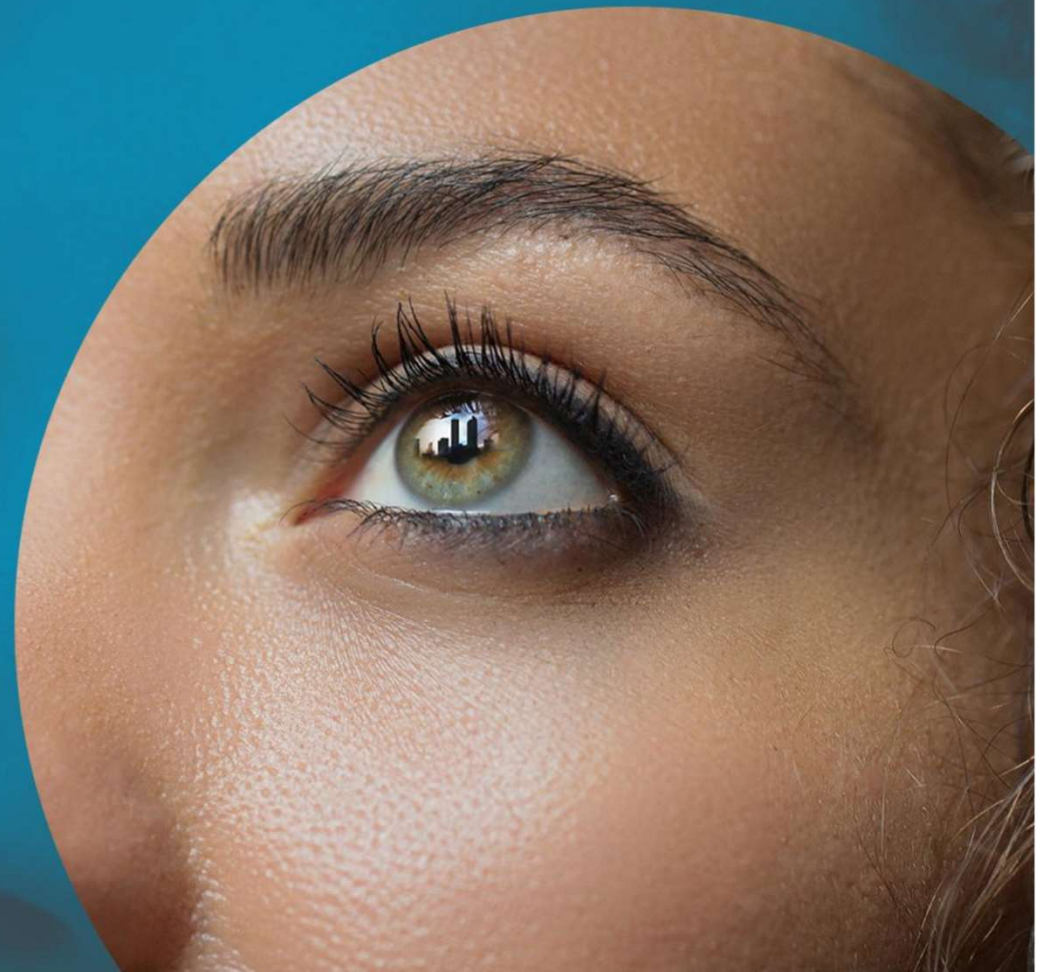
©2019 Teradata

D10- Washington University in St. Louis USA

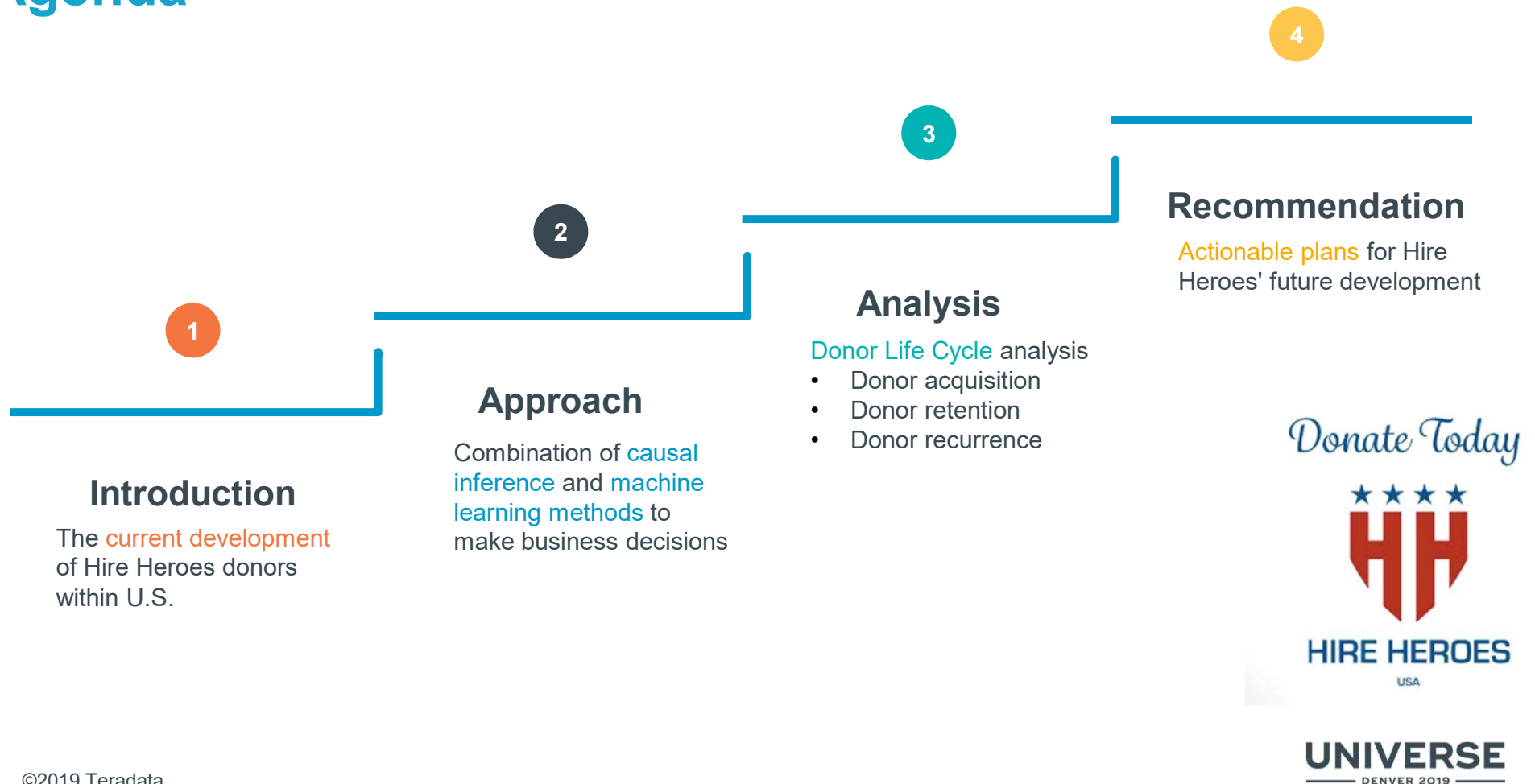
Development for Hire Heroes USA

Wenchen Sun(Presenter)
Peiyilin Shen, Jingxuan Zhou
October, 2019

UNIVERSE
— DENVER 2019 —
teradata.

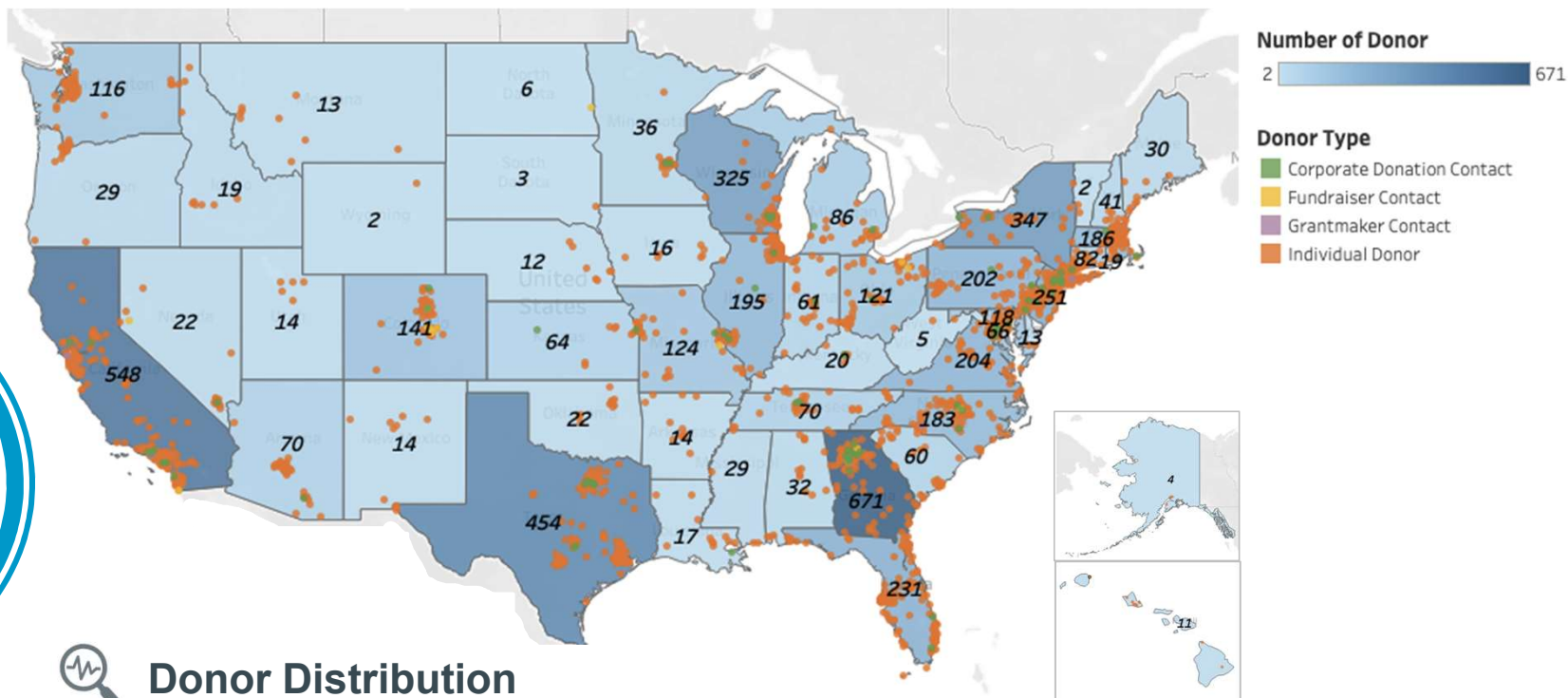


Agenda



Intro

Current Development



Donor Distribution



Dense States: 13
(≥ 141 donors)



Moderate States: 23
(18~140 donors)



Little-No States: 15
(≤ 17 donors)



Hire Heroes has donors across **ALL** states within U.S.

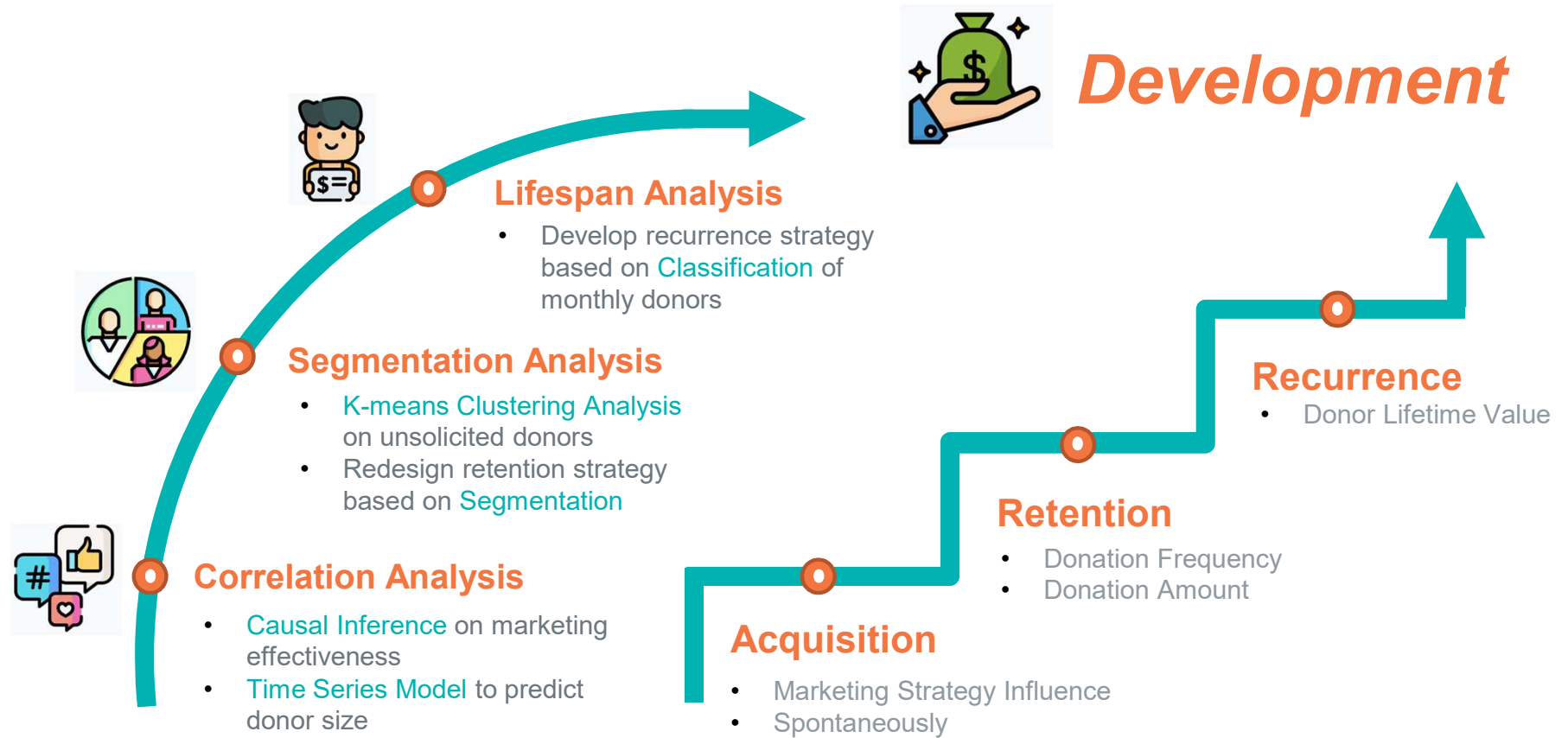


Most donors are **Individual Donors**

**The states are divided by quartering*

UNIVERSE
DENVER 2019

Our Approach

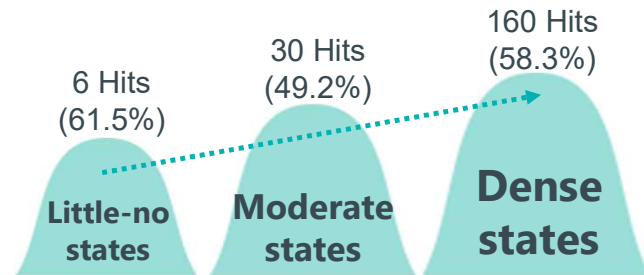


First Stage: Donor Acquisition

Marketing-Hit donors



2643 donors are influenced by **Marketing Strategy** (i.e. social media, fundraiser calling).



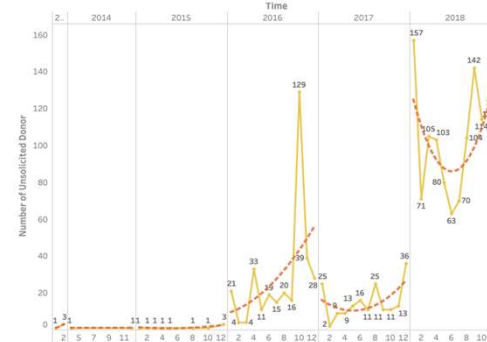
$$\text{Conversion Rate} = \frac{\text{Donors}(\text{Make Donations})}{\text{Donors}}$$

Use New Metrics for Marketing Impact

Unsolicited donors



1072 donors are Non-event/ fundraiser donors.



Use Time Series Model for Donor Prediction



2019 Year Prediction
104 Donors/month on average
August has most donors (277)



More about Unsolicited Donors

- How to retain donors

Second Stage: Donor Retention



1072
Unsolicited Donors



Repeat Donation Rate

17.22% of unsolicited donor will donate more than once a year on average.

- Standard Range: 20%~40%*

17.22%



Donation Frequency

An unsolicited donor will donate 1.5 times per year on average.

1.5 Times



Time between Donation

An unsolicited donor will make a repeated donation after 255 days on average.

255 Days



Donation Amount

\$391.03 gifts are donated by an unsolicited individual donor on average.

- Minimum: \$0.09
- Maximum: \$100,000

391.3\$

Challenge

Low Donation Frequency

Large Gap of Donation Amount

Solution

Marketing Strategies based on Donor Segmentation

SUMMARY

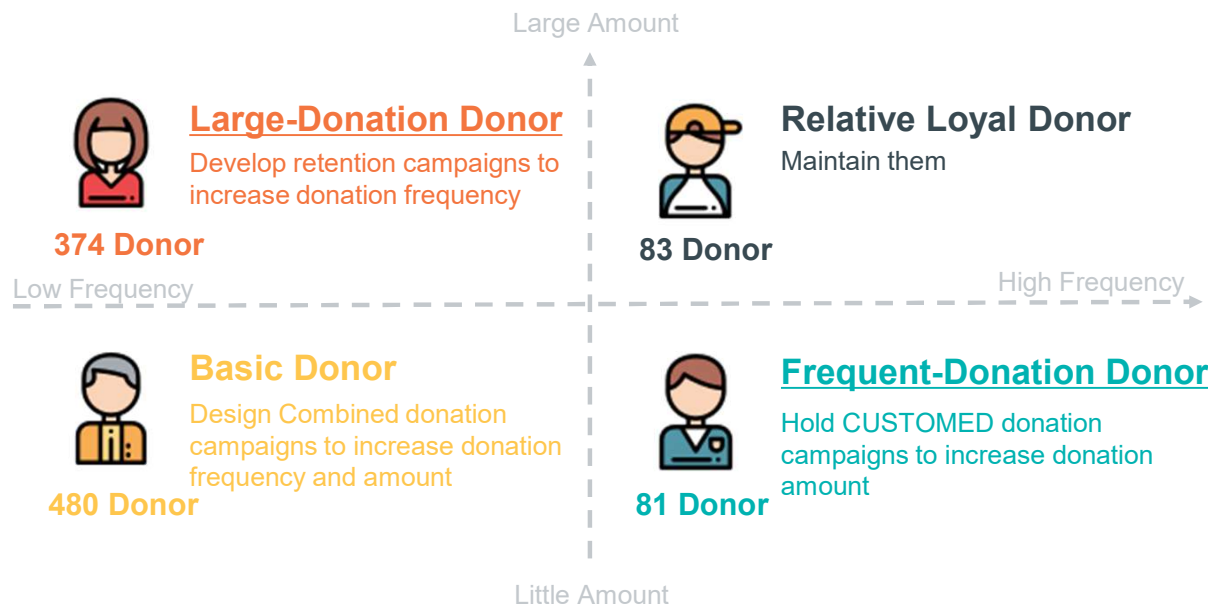
* From external source

Recommendation: Hire Heroes Retention Strategy

Perspective 1: Increase Average Donation Amount

Perspective 2: Increase Donation Frequency

Unsolicited Donor Segmentation



*The result is based on **K-means Clustering Analysis**



Marketing Strategies

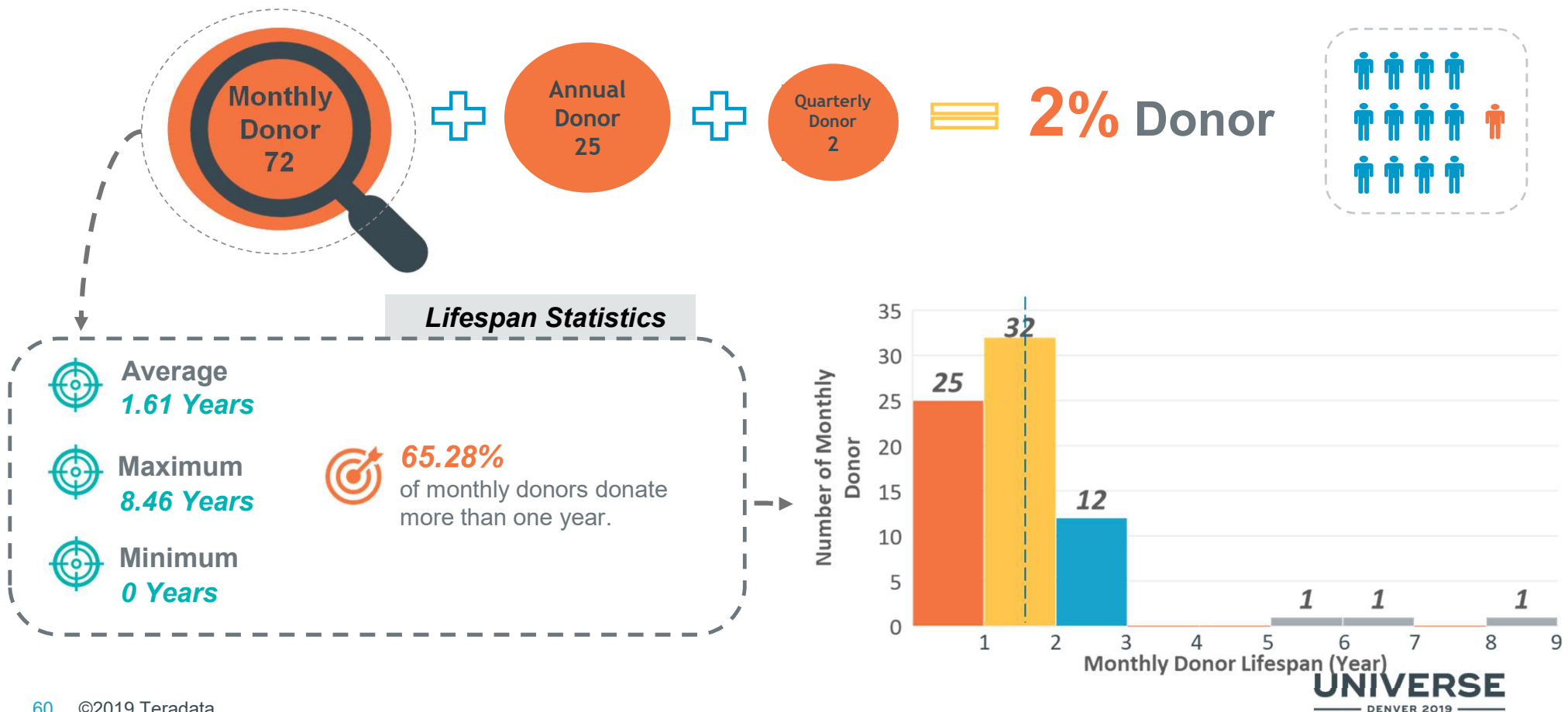
Strategy 1: Create Email Campaign

- Re-engage Large-Donation donors with "We Miss You" emails
- Personalized content for Frequent-Donation donors based on their past giving amount

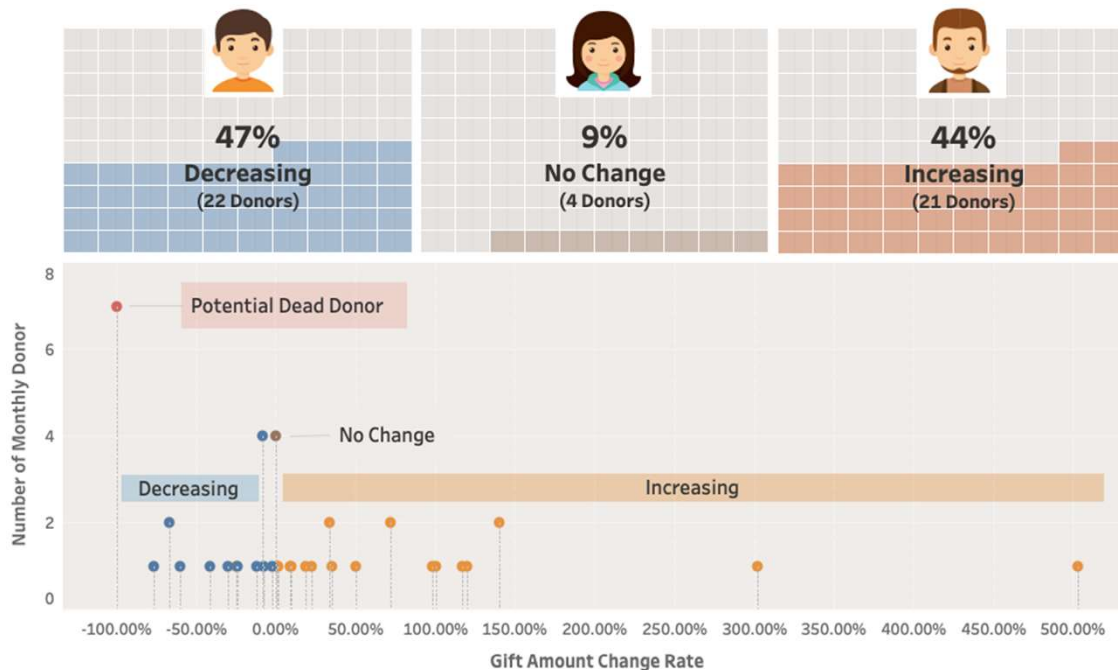
Strategy 2: Start Loyalty Program

- Encourage Large-Donation donors to repeat donations
- Use rewards/certificates as an incentive to attract Frequent-Donation donors donate more gifts

Third Stage: Donor Recurrence



Future Development: Hire Heroes Recurrence Strategy



Potential Dead Donor

Donors who quit donation last year



Decreasing
No Change

Encouraging More Donations

- Communicate on donation experience regularly
- Share the impact of donation on veterans
- Host more fundraising/marketing events (i.e. holiday marketing)



Potential
Dead Donor

Following up Donor Journey

- Encourage donors to speak up ideas/feedback by sending letters, calling and sharing surveys



Increasing

Extending Lifespan

- Create loyalty programs to enhance engagement (i.e. charity auctions, networking meetups)
- Sending regular acknowledgements to maintain strong connections

Thank you.

THANK YOU
TO ALL

©2019 Teradata

DATA CHALLENGE SESSION 2 WRAP UP

UNIVERSE

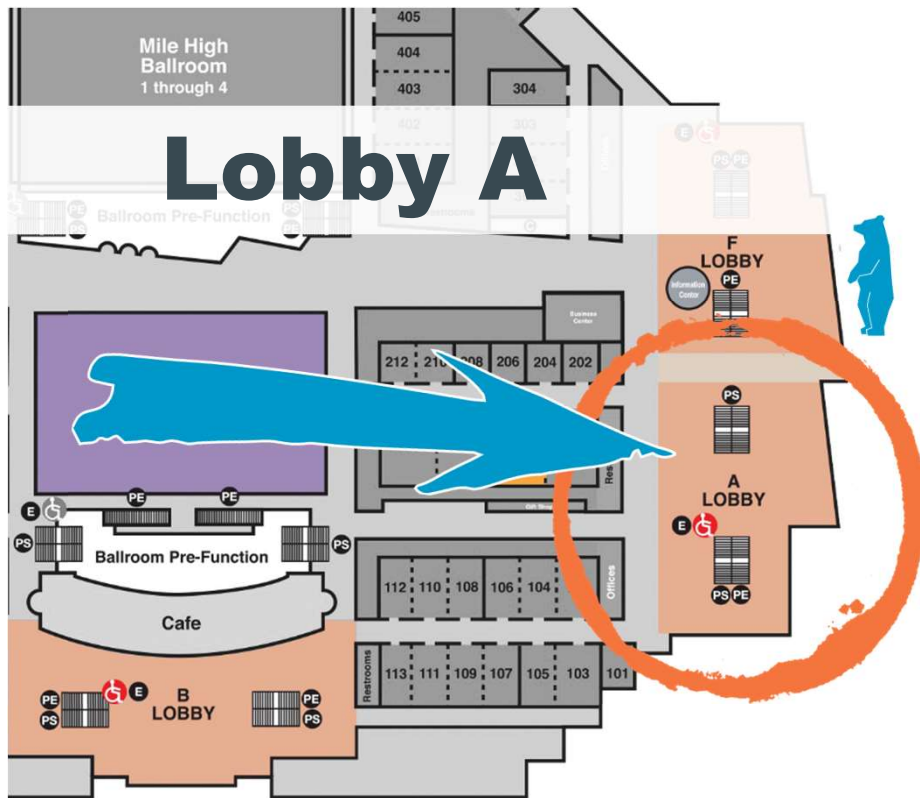
DENVER 2019

teradata.



Student Poster Presentations

Meet All Finalists and
Honorable Mention teams!!



Sunday
Oct 20

6:30 – 8:00pm

SUNDAY

MONDAY

Monday
Oct 21

8 – 8:45am

11:00am – 1:45pm

Award Categories

Data Challenge

- | | |
|--|-----------------------|
| • People's Choice - Best Presentation | Attendees vote |
| • Overall Winner | Academic vote |
| • Best Value to Hire Heroes USA | Hire Heroes USA vote |

Analytics Challenge

- | | |
|--|-----------------------|
| • People's Choice - Best Presentation | Attendees vote |
| • Best Use of Analytics and Visualization Tools | Attendees vote |
| • Overall Winner | Academic vote |

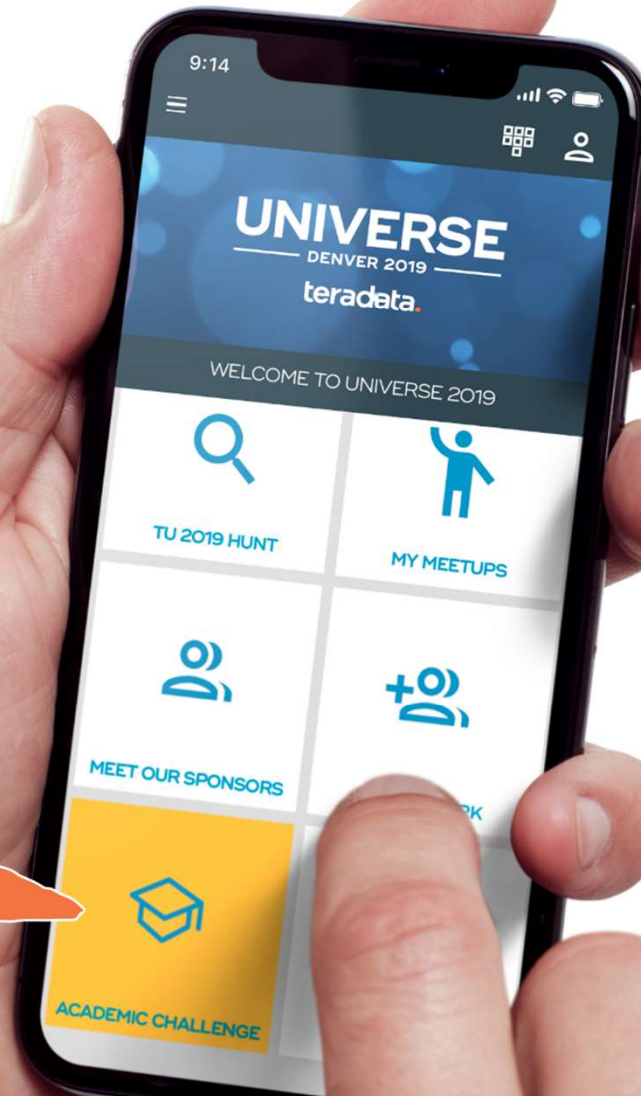
Teradata Technology Award

- | | |
|-----------------------------------|---------------|
| • Best Use of Teradata Technology | Academic vote |
|-----------------------------------|---------------|

VOTE

for your
FAVORITE teams!

It's in the app!



Voting opens
on **Sunday**
at 3pm

Voting closes
on **Monday**
at 2pm

UNIVERSE
DENVER 2019

Student Celebration Event

Monday, October 21, 6:30-8:30pm

Granite Ballroom @ Hyatt Regency Denver

All
attendees
invited!



Thank you.

THANK YOU
TO ALL

©2019 Teradata