

I<sup>P</sup>R<sup>O</sup>-351

Combating Underage Drinking and Driving



# Scope of the Problem



75% of seniors in high school have consumed alcohol



60% of juniors and seniors said they have ridden with an impaired teen driver



48% of teens that drink were said to be non-drinkers by their parents

# Prevention

**“Parents are the best resources to prevent children from drinking and driving.”**

–The Surgeon General’s *Call to Action*

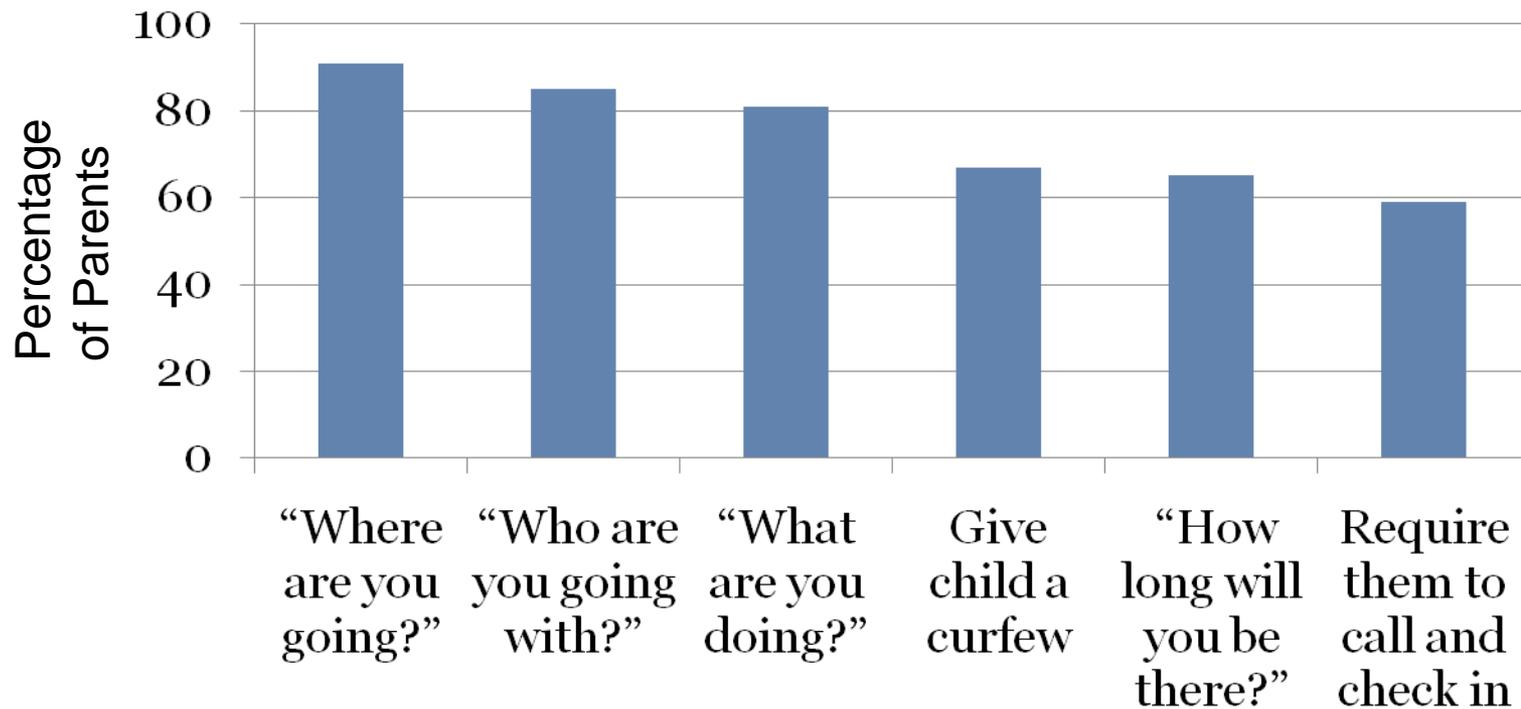
Increase  
communication  
between parent  
and child

Parents control  
access to the car



# Parents' Feelings on Underage Drinking

- **From parent surveys, we found they ask their child:**



- **How concerned are you with underage drinking and driving?**
  - 85% of parents said concerned or extremely concerned

# Our Solution

An iPhone application that will:

- Increase communication between the parent and child
- Test the key impairments: reaction time, dexterity, cognition, etc.

Parental  
Informant



(Beginning of  
the night)

Impairment Apps



(End of  
the night)

Failed tests  
informs parents



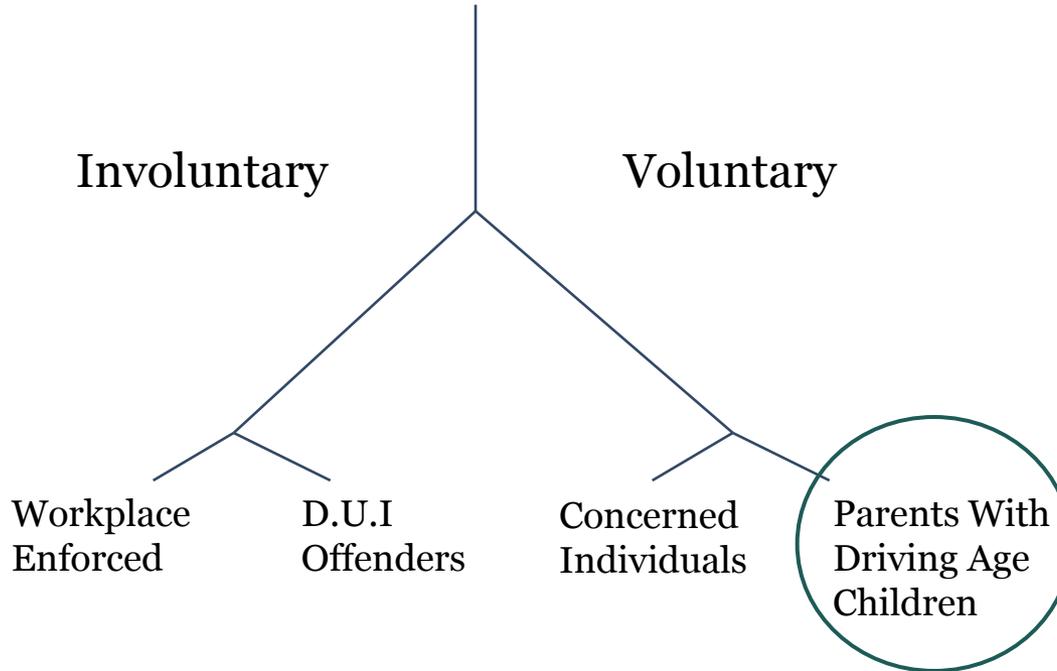
# Other Impairments

- Parents were also worried about other impaired driving including sleep deprivation and drugs
- **41%** of drivers have admitted to falling asleep behind the wheel (Chicago Tribune)
- The impairments we found to be common among alcohol, drug use, and sleep deprivation included:



# Our Market

- Parents who are concerned about the well-being of their children and control access to the car



Voluntary Market = \$215.2 million (Daily Herald)

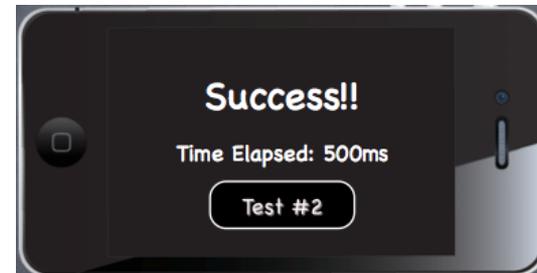
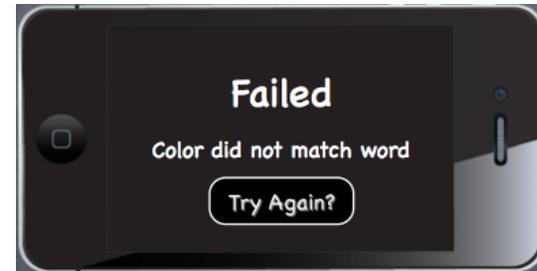
# Value Proposition for Parents

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- Peace of mind that the child is safe
- Reduce risk of catastrophic financial losses

*“Too many young people die on the road AND take other people with them. Give me something that would let me know my child isn’t making poor choices, which will in turn make other people on the road more safe!” –Parent Survey Respondent*

# Impairment Test 1: Word/Color Game



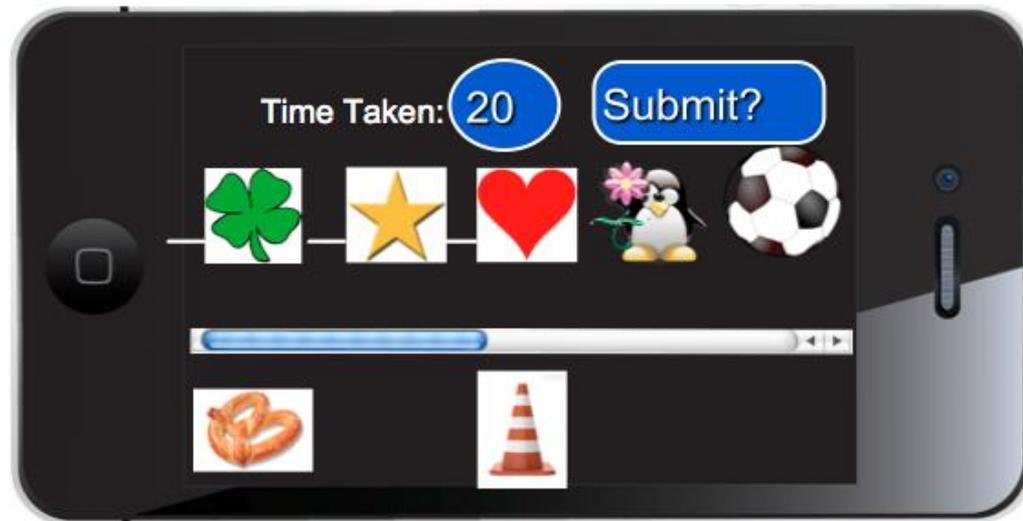
Cognition

Multitasking

Vision

Reaction Time

# Impairment Test 2: Memory Game



Cognition

Memory

Vision

Reaction  
Time

# Impairment Test 3: Obstacle Course Game



Cognition

Balance

Vision

Reaction  
Time

Multitasking

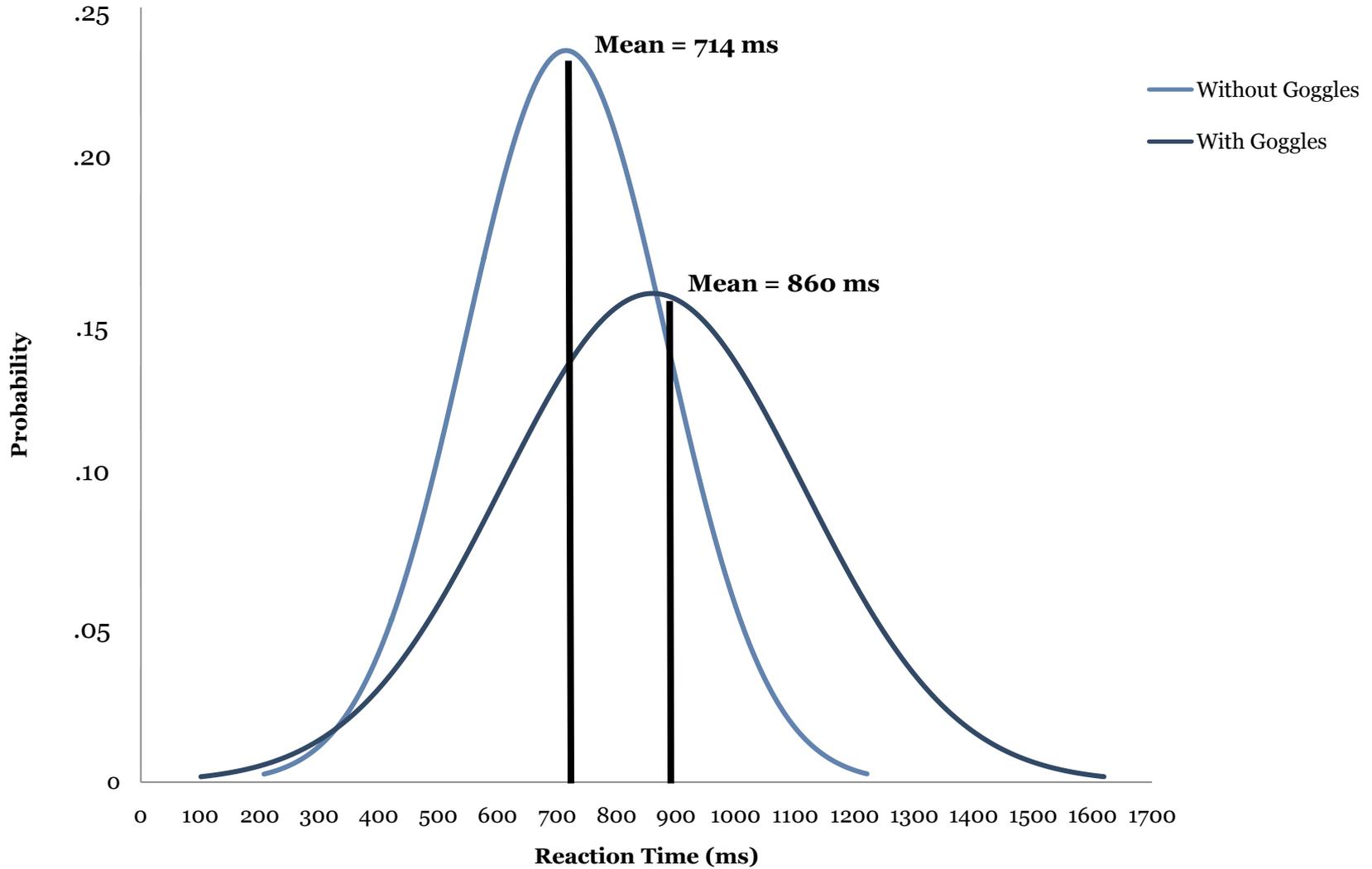
Clinical Research: *Effects of Alcohol on Tests of Executive Functioning in Men and Women: A Dose Response Examination*; Temple University, Experimental and Clinical Psychopharmacology

# Testing Methodology

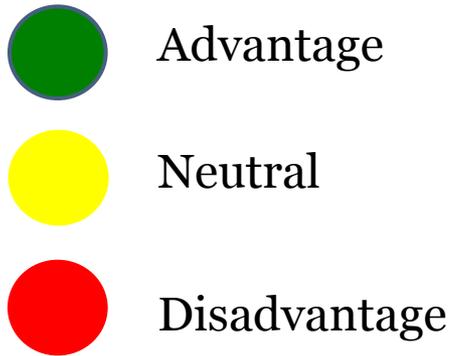
- Performed testing to validate impairment game concept
- Conducted testing using apps similar to our designs
- Used DrunkBuster impairment goggles
- Tested 100 students' reaction times with and without goggles



# Normal Distribution for Reaction Time



# Competitive Advantage

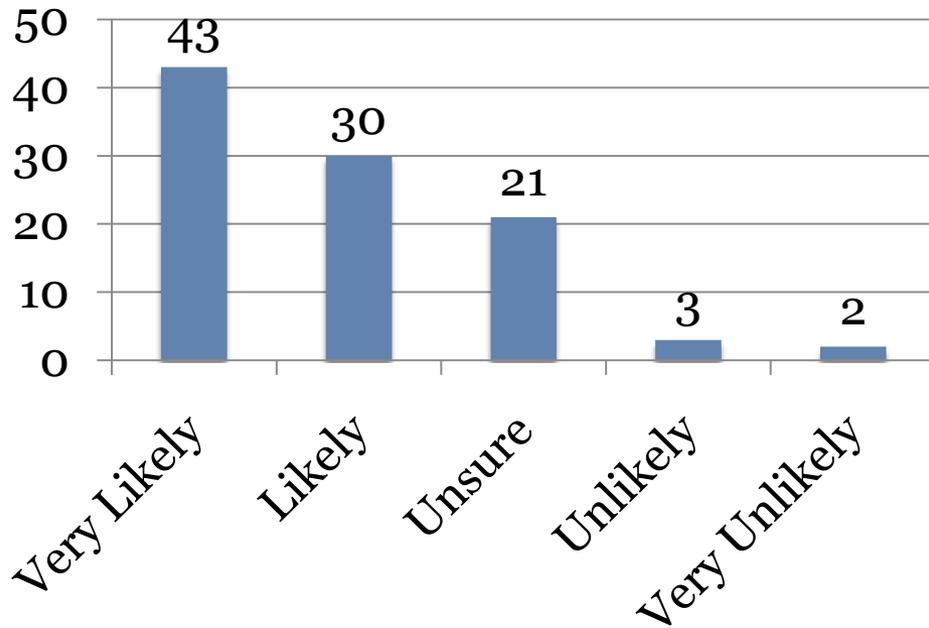


	Clue-Me-In	Other Phone Apps	Breathalyzer	Transdermal	Infrared
Cost	●	●	●	●	●
Ease of Adoption	●	●	●	●	●
Intrusiveness	●	●	●	●	●
Measure multiple impairments	●	●	●	●	●
Scientific support	●	●	●	●	●

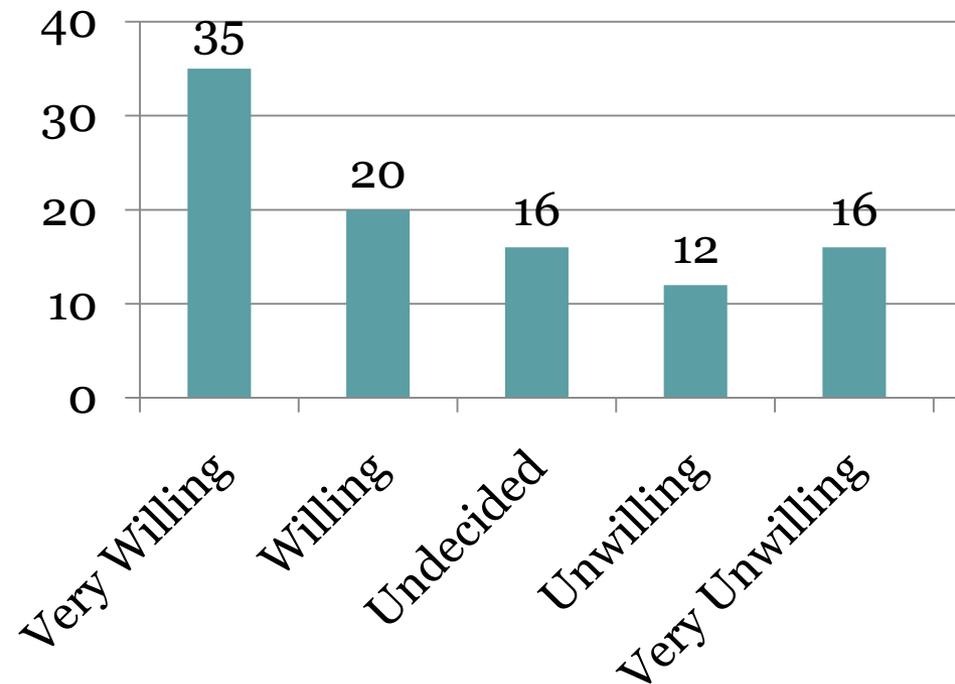
# Survey Results

- “Teens love the world of apps that smart phones are providing; it'll be a winner!” –Parent Survey Respondent

## Parent Likelihood of Purchasing App (%)



## Teens Willingness to Use App (%)



90 parents and 100 teens surveyed

# App Business Research

- Phil Leslie, ProOnGo Expense Reporting



izUP helps drivers avoid distractions caused by their mobile phones



# Business Model

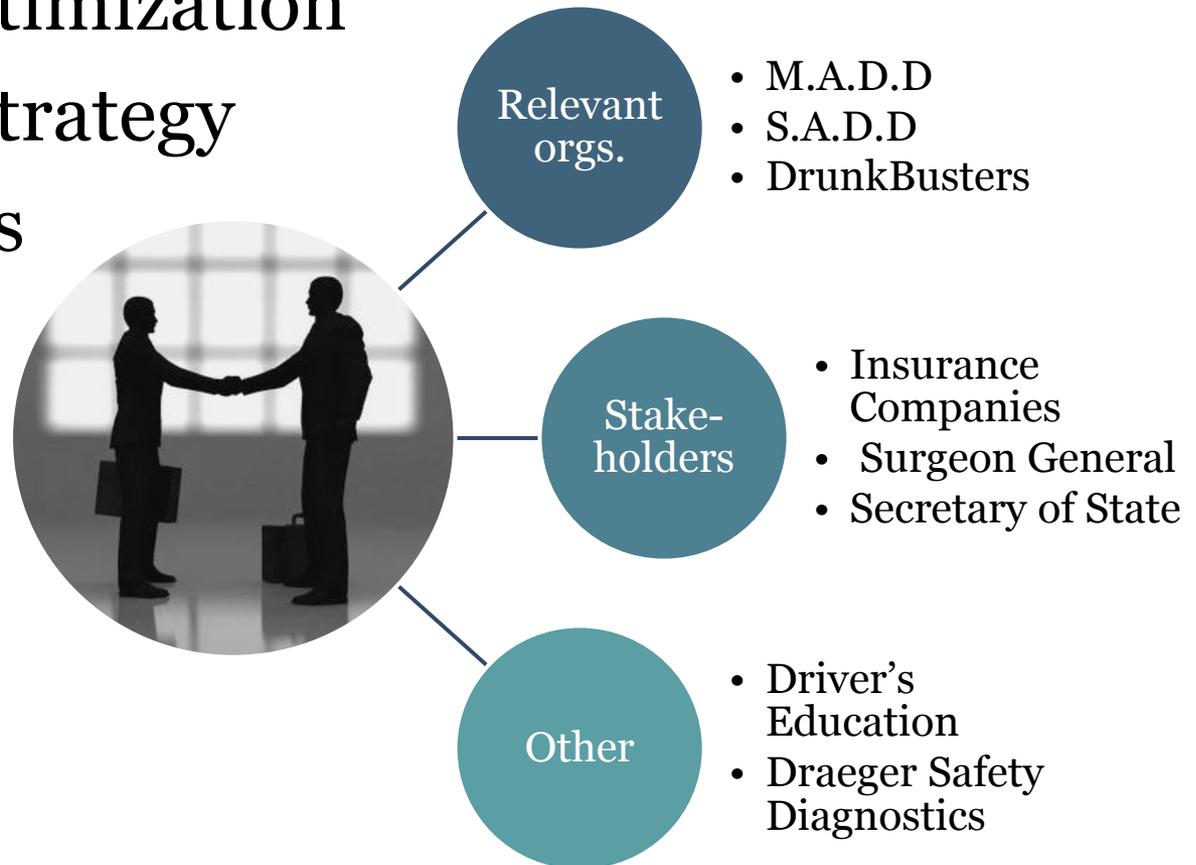


- ❑ Subscription-based: \$6.99 annually
- ❑ Begin with Clue-Me-In
- ❑ Additional platforms (Android, Palm, etc.), release new features at staggered points in time:



# Go-To-Market Strategy

- Blogs and reviews
- Keyword optimization
- Freemium strategy
- Partnerships



# Financial Statement

- Goal: \$50,000 donation to develop the App

	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>
Price (Annual Subscription)	\$6.99	\$8.99	\$9.99
# of Active Subscribers	20,000	30,000	50,000
Gross Sales	140,000	270,000	500,000
Apple Commission	<u>42,000</u>	<u>81,000</u>	<u>150,000</u>
<b>Net Sales</b>	\$98,000	\$189,000	\$350,000
Operating Costs			
General/Administrative	\$10,000	\$10,000	\$10,000
Sales and Marketing			
Expense	60,000	60,000	60,000
Research and Development	<u>10,000</u>	<u>20,000</u>	<u>50,000</u>
<b>Net Costs</b>	<u>\$80,000</u>	<u>\$90,000</u>	<u>\$120,000</u>
<b>Net Income</b>	<u>\$18,000</u>	<u>\$99,000</u>	<u>\$230,000</u>

# Accomplishments

Impairment research on alcohol, sleep deprivation, and drug use

Research on clinical studies and testing

Design of impairment games

IRB Certification

Testing of impairment games

Survey feedback from target market (parents and teens)

App business model

# Next Steps For Spring 2011

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Develop the apps

Conduct testing once apps are developed

Establish key partnerships

Marketing

# Questions?

Special Thanks:

Phil Leslie, ProOnGo

Randy Sonnenfeld, State Farm Insurance

Curt Kindschuh, DrunkBusters

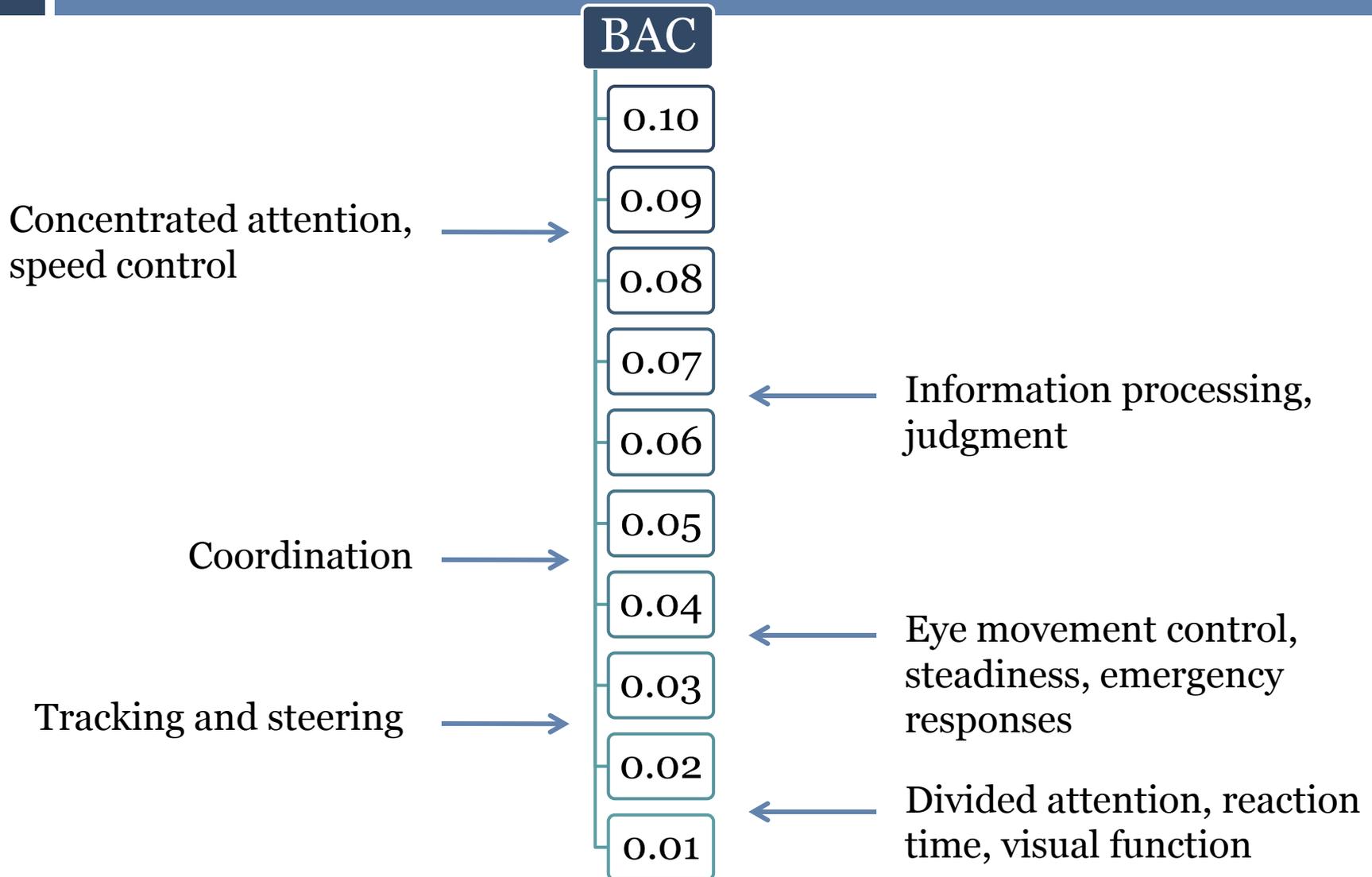
David Malham, M.A.D.D.

Danny Gandara, IIT Psychology

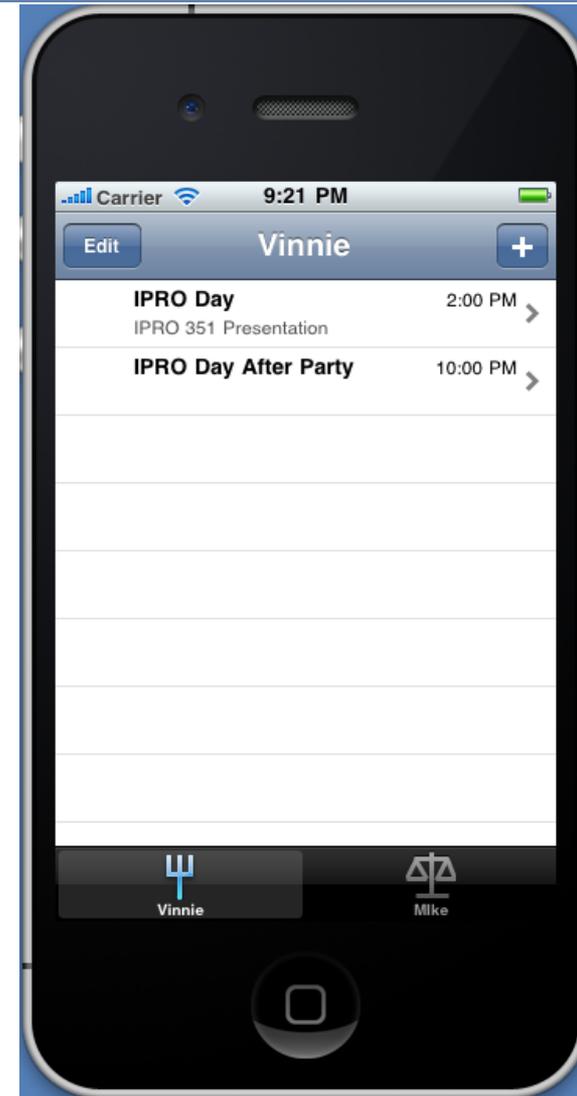
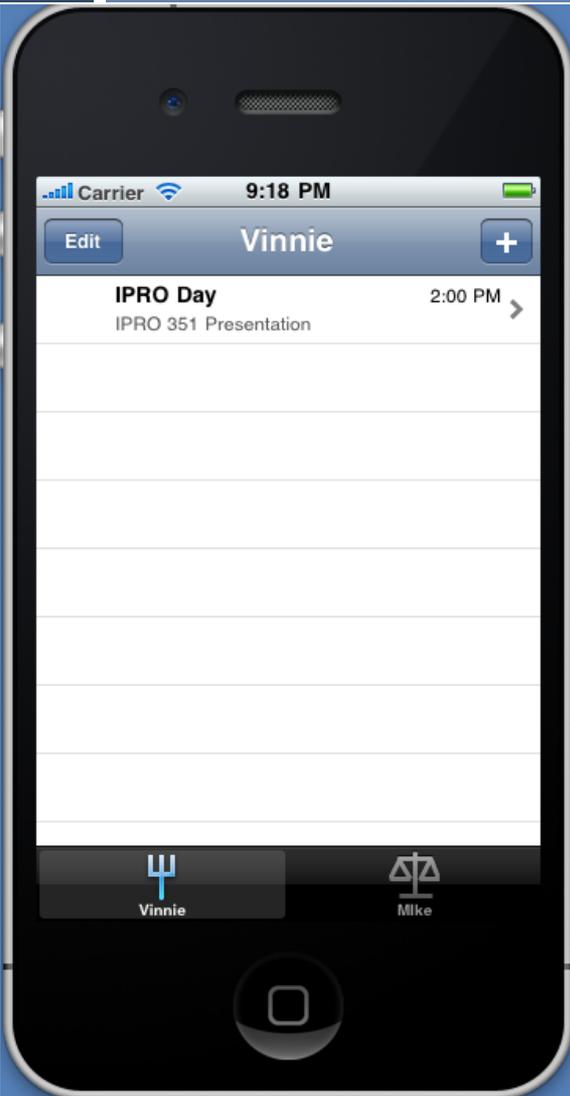
Tom Gorman, Entrepreneurial Design

Dr. Matthew Matigian, Blue World Asset Managers

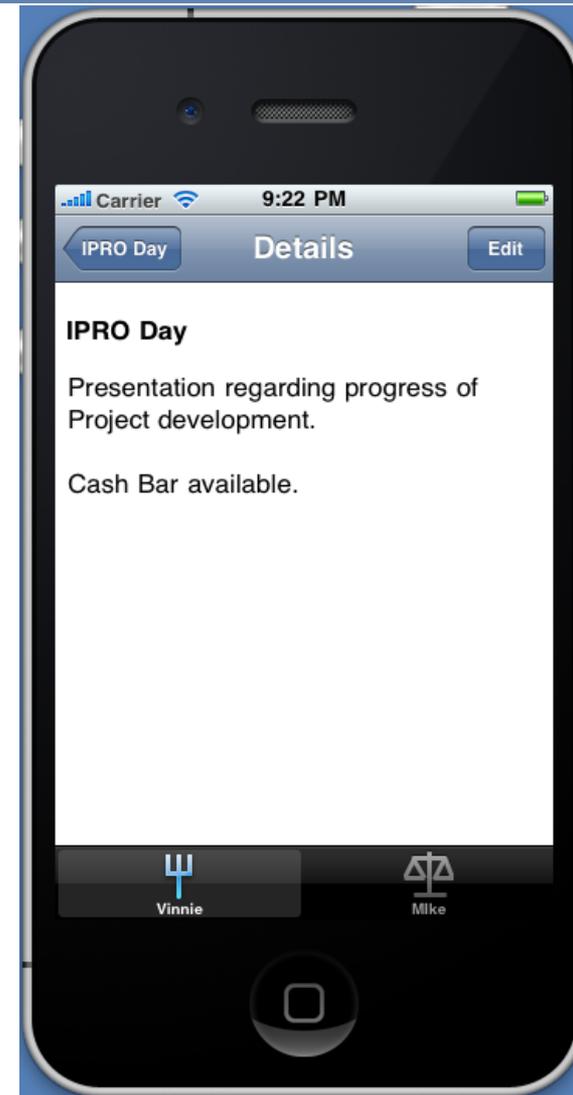
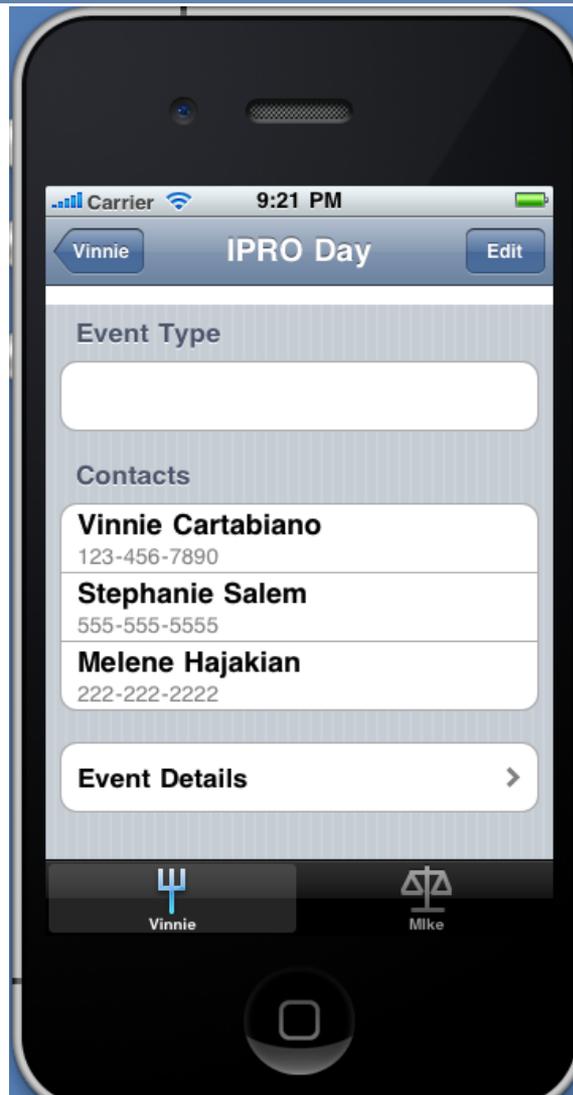
# Impairment by BAC



# Parental Informant



# Parental Informant (cont'd)



Substance	Symptoms								
	Impaired Memory	Impaired Cognitive Thinking	Poor Balance	Blurred Vision	Slurred Speech	Slowed Reaction Time	Poor Concentration	Drowsiness/ Sedation	Pupil Constriction/ dilation
Alcohol	X	X	X	X	X	X	X	X	X
Recreational Drugs	X	X	X		X	X	X	X	X
Prescription Drugs	X	X	X		X	X	X	X	
Sleep Deprivation	X	X	X			X	X	X	X

<b>Game Idea:</b>	<b>Measures:</b>
Memory card game	Cognition, memory, reaction time
Word/color match game	Visual processing, cognition, reaction time, multitasking
Identify X colored car as it passes	Visual processing, cognition, reaction time
Organize number bubbles	Cognition, visual processing
Math games	Cognition, reaction time
Math obstacle course	Dexterity, cognition, multitasking, visual processing, balance
“Secret hand shake” game	Balance, memory
DDR game for fingers	Reaction time, visual processing
Spelling/word games	Memory, cognition

# Cost of a DUI

<b>Total Cost of a First Time Offender</b>	<b>\$7,828 to \$10,828</b>
Minimum Fine	\$390
Penalty Assessment	666
State Restitution Fund	100
Alcohol-Abuse Education Fund	50
Blood/Breath Testing Fee	37
Jail-Cite-and-Release Fee	10
Driving/Alcohol Awareness School	375
License Reissue Fee	100
Attorney Fees	2500
Auto Insurance Increase	3,600 to 6,600

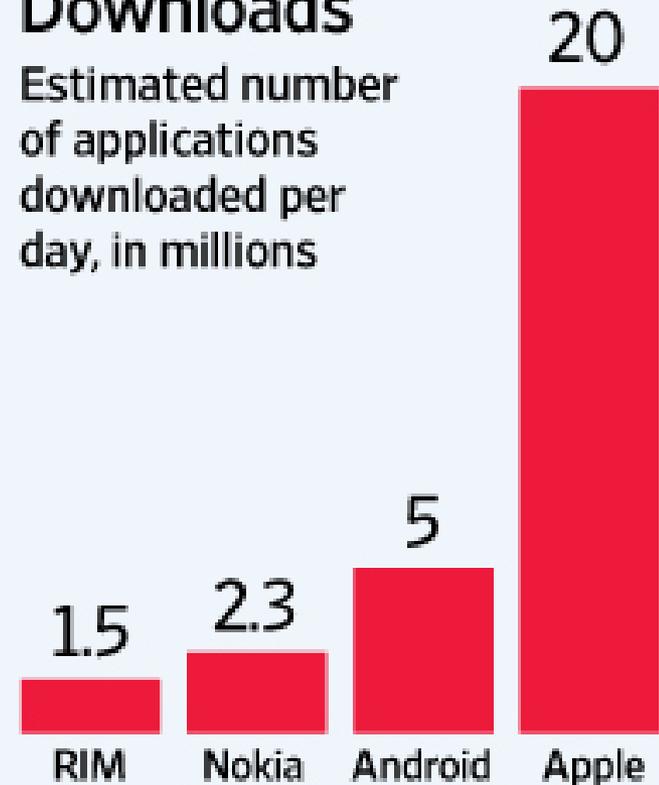
Many states now require a Car Ignition Interlock device which costs \$1,200 to \$3,600

# Apple iTunes Store

- 160 million registered credit cards on file
- Largest, with 250,000 apps
- Market share was 24.2% at the end of August

## Downloads

Estimated number of applications downloaded per day, in millions



Source: Morgan Keegan

# Accomplishments This Semester

## Finance/Marketing

- Pricing model
- Business model
- Financial statements
- Go-to-market strategy
- iPhone app business research
- Contact with insurance companies, app business experts

## Behavioral/Survey

- Impairment research: cannabis & sleep deprivation
- IRB certification
- Survey for teens
- Survey for parents
- Data analysis of survey results

## App Research/Design

- Impairment research
- Design of impairment apps
- Clinical study research
- Impairment testing
- Test analysis

## App Development

- Clue-Me-In prototype
- Simulation of impairment apps/screenshots
- Became familiar with XCode

# Alcohol Impairment: Women

## WOMEN

<b>WOMEN</b>										
<b>APPROXIMATE BLOOD ALCOHOL PERCENTAGE</b>										
<b>DRINKS</b>	<b>BODY WEIGHT IN POUNDS</b>									
	<b>90</b>	<b>100</b>	<b>120</b>	<b>140</b>	<b>160</b>	<b>180</b>	<b>200</b>	<b>220</b>	<b>240</b>	
<b>0</b>	.00	.00	.00	.00	.00	.00	.00	.00	.00	<b>ONLY SAFE DRIVING LIMIT</b>
<b>1</b>	.05	.05	.04	.03	.03	.03	.02	.02	.02	<b>IMPAIRMENT BEGINS</b>
<b>2</b>	.10	.09	.08	.07	.06	.05	.05	.04	.04	<b>DRIVING SKILLS SIGNIFICANTLY AFFECTED</b>
<b>3</b>	.15	.14	.11	.10	.09	.08	.07	.06	.06	
<b>4</b>	.20	.18	.15	.13	.11	.10	.09	.08	.08	<b>POSSIBLE CRIMINAL PENALTIES</b>
<b>5</b>	.25	.23	.19	.16	.14	.13	.11	.10	.09	
<b>6</b>	.30	.27	.23	.19	.17	.15	.14	.12	.11	<b>LEGALLY INTOXICATED</b>
<b>7</b>	.35	.32	.27	.23	.20	.18	.16	.14	.13	
<b>8</b>	.40	.36	.30	.26	.23	.20	.18	.17	.15	
<b>9</b>	.45	.41	.34	.29	.26	.23	.20	.19	.17	<b>CRIMINAL PENALTIES</b>
<b>10</b>	.51	.45	.38	.32	.28	.25	.23	.21	.19	

**Subtract .01% for each 40 minutes of drinking.**

**One drink is 1.25 oz. of 80 proof liquor, 12 oz. of beer, or 5 oz. of table wine.**

# Alcohol Impairment: Men

<b><u>MEN</u></b>									
	<b>APPROXIMATE BLOOD ALCOHOL PERCENTAGE</b>								
<b>DRINKS</b>	<b>BODY WEIGHT IN POUNDS</b>								
	<b>100</b>	<b>120</b>	<b>140</b>	<b>160</b>	<b>180</b>	<b>200</b>	<b>220</b>	<b>240</b>	
<b>0</b>	.00	.00	.00	.00	.00	.00	.00	.00	<b>ONLY SAFE DRIVING LIMIT</b>
<b>1</b>	.04	.03	.03	.02	.02	.02	.02	.02	IMPAIRMENT BEGINS
<b>2</b>	.08	.06	.05	.05	.04	.04	.03	.03	DRIVING SKILLS SIGNIFICANTLY AFFECTED
<b>3</b>	.11	.09	.08	.07	.06	.06	.05	.05	
<b>4</b>	.15	.12	.11	.09	.08	.08	.07	.06	
<b>5</b>	.19	.16	.13	.12	.09	.09	.09	.08	POSSIBLE CRIMINAL PENALTIES
<b>6</b>	.23	.19	.16	.14	.11	.11	.10	.09	
<b>7</b>	.26	.22	.19	.16	.15	.13	.12	.11	LEGALLY INTOXICATED
<b>8</b>	.30	.25	.21	.19	.17	.15	.14	.13	
<b>9</b>	.34	.28	.24	.21	.19	.17	.15	.14	CRIMINAL PENALTIES
<b>10</b>	.38	.31	.27	.23	.21	.19	.17	.16	
<b>Subtract .01% for each 40 minutes of drinking.</b>									
<b>One drink is 1.25 oz. of 80 proof liquor, 12 oz. of beer, or 5 oz. of table wine.</b>									

# Key Benefits

Gives parents peace of mind

Cost effective

Objective measure  
of impairment

Less  
intrusive

Apply to  
broader  
market

Easy to  
adopt

Measure  
other  
impairments

# Illume Software: iZup Application

## Features:

- ❑ Prevents outgoing text messages, emails and phone calls while driving.
- ❑ Sends incoming calls to voicemail and holds text messages when the vehicle is in motion.
- ❑ Prohibits web browsing and application use while driving.
- ❑ Three authorized phone numbers allowed (e.g. mom, employer, etc.).
- ❑ One authorized application allowed (e.g. navigation application).
- ❑ Emergency 911 quick dial always available.
- ❑ Emergency 911 notification sent with a map to account holder showing location and time of the call



# Survey Results: Parent Demographics

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## □ Parents

- 87 parents surveyed
- Some stats on our participants
  - 60% fell between the ages of 46-55
  - 77% Caucasian
  - 58% had a Bachelor's degree or higher
  - 58% owned an iPhone, iPod touch, iPad, or smartphone

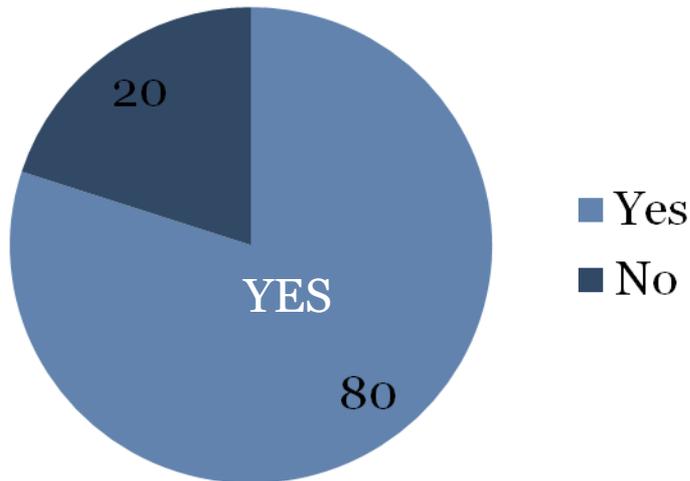
# Survey Results: Teen/Young Adults Demographics

- Teens/Young Adults
  - 97 teens and young adults surveyed
- Some stats on our participants
  - 36% were 16-17 yrs old, 30% were 18-19 yrs old, 44% were 20-21 yrs old, 20% were 22-23 yrs old
  - 73% Caucasian
  - 82% own an iPhone, iPod touch, iPad or smartphone

# Parent and Teen Driving Stats

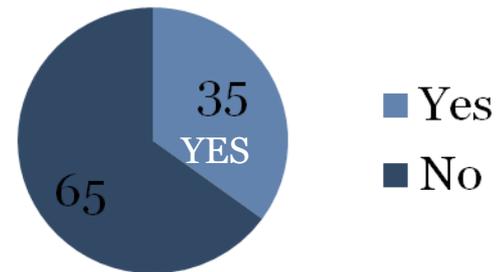
Have you ever driven while intoxicated or ridden with a driver who was?

## Parent

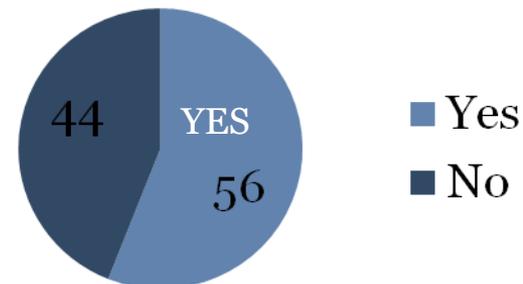


## Teen/Young Adult

### As Driver



### As Passenger



# Survey Results: Parent/Child Relationships

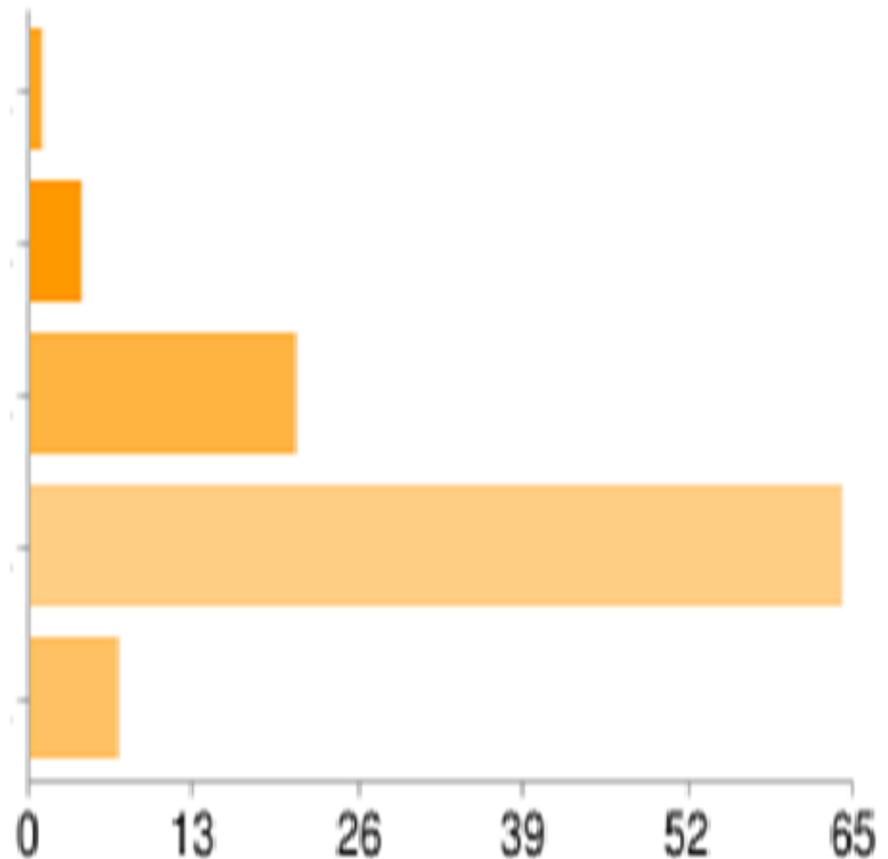
1% said they don't listen to their parents

4% said they listen to their parents for fear of getting into trouble

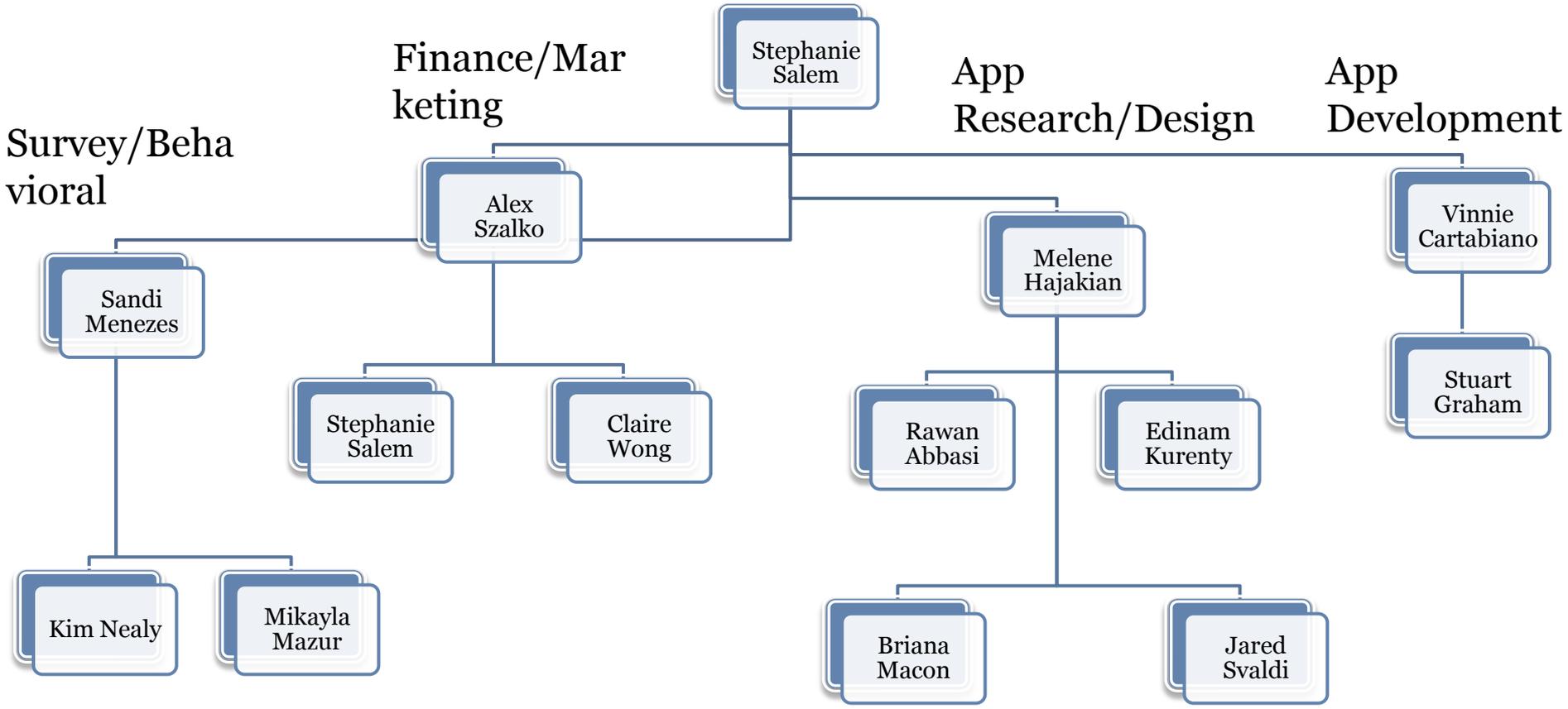
22% said they listen to their parents because they are expected to

66% said they listen to their parents because they trust them

7% said none of these were applicable



# Team Organization



# Clinical Research: Word/Color

- Clinical: ***Processing Bimodal Stimulus Information Under Alcohol: Is There a Risk to Being Redundant?***
- Results showed that alcohol **slowed reaction time** in a general dose-dependent manner in all three stimulus conditions with the reaction time (RT) speed-advantage of the redundant signal being maintained, even under the highest dose of alcohol. Evidence for an RT advantage to bimodal stimuli under alcohol challenges the general assumption that alcohol impairment is intensified in multistimulus environments.

# Clinical Research: Memory

- Clinical: ***Differential Effects of Alcohol on Working Memory: Distinguishing Multiple Processes***
- Alcohol consumption impaired memory for auditory and visual sequences but not memory for simultaneous arrays of auditory or visual stimuli. These results suggest that processes needed to encode and maintain stimulus sequences, such as rehearsal, are more sensitive to alcohol intoxication than other Working Memory mechanisms needed to maintain multiple concurrent items, such as focusing attention on them. .. The results suggest that moderate doses of alcohol impair Working Memory by affecting certain mnemonic strategies and executive processes rather than by shrinking the basic holding capacity of WM. (PsycINFO Database Record (c) 2010 APA, all rights reserved) (from the journal abstract)

# Clinical Research: Obstacle Course

- Clinical Research: *Effects of Alcohol on Tests of Executive Functioning in Men and Women: A Dose Response Examination*
- The TMT is a widely used test of EF composed of two parts on separate sheets of paper. On Part A of the TMT (TMT-A), the participant is instructed to use a pencil to connect 25 randomly arranged numbers in order (1-2-3-4 . . .), and on Part B of the TMT (TMT-B) the participant is instructed to use a pencil to connect 25 randomly arranged numbers and letters in alternating numerical and alphabetical order (1-A-2-B . . .). The participant is also instructed that erasing is not allowed, and if an error is made (which is quickly pointed out to the participant), then he or she should return to the last correct circle to continue performing the task.