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# Addressing the Challenges of Developing Healthy and Novel Flavors through Screening and Consumer Segmentation

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# Trends in Health and Wellness

Transformation in Consumer Attitudes

- Absence of negatives→ Presence of Positives → Balanced Nutrition
- Holistic
  - Decrease in the number of ingredients
  - Ingredients consumers can understand
- Kosher
- Ethical environment



Source: Mintel 2010

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# Trends in Health and Wellness
## Focus on Fruits

- Fruits exemplify the convergence of today's leading food trends
  - Marvelous profiles
  - Exotic personalities
  - Strong associations with health and wellness, and indulgence
- Antioxidants are perceived as a powerful stamp of approval driving consumer behavior
- Antioxidant-rich fruits are expected to offer key close-in market opportunities

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# Market Opportunity / Consumer Readiness Map

On The Periphery → Moving In → Close In

# Novel Flavors

- Novel flavors
  - Less identifiable
  - Limited emotional connection
  - Global in scope with ethnic influences
- Consumer drivers
  - Explore senses to maximize the moment
  - Connect through the emotions and senses, people searching for a dive into the "unreal" through virtual possibilities
  - Cross-cultural influences and pushing boundaries – fusion and new combinations

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# Research Objectives

- Identify overall flavor appeal of flavors selected from the Flavor Opportunity Map
  - 100 flavors / conceptually via on-line survey
  - 50 flavors / aroma evaluations
- Identify flavors consumers perceive as “best fitting” among snacks
- Transform data into actionable insights:
  - Using TURF analysis, identify the optimal flavor lineups to maximize consumer reach/penetration
  - Segment consumers based upon health consciousness to gain more in-depth understanding related to flavors
  - Assess novelty of flavors through blind versus named evaluation of flavors

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# Research Approach

- **Methodology**:
  - Phase 1:  300 respondents via on-line survey
    - Assessment of 100 flavors for overall appeal and fit to snacks
  - Phase 2: 120 consumers onsite at Givaudan, Cincinnati
    - Assessment of 50 flavor (aroma) on the miniVAS + online questionnaire
    - Two separate visits – flavors were first tested blinded and then named with a short benefit description

- **Respondents**:
  - Mild/Moderate/Heavy Health Orientation (equal distribution per cell of each)
  - Adults age 35-60
  - 50/50 male/female
  - Must eat any type of food between meals once per day or more often

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# Research Approach
## Segmentation

### Health Orientation

| | |
|---|---|
| Not Health Oriented | I eat whatever I want without worrying about the health impact |
| Mild Health Oriented | Eating healthy is less of a priority for me, but desirable provided that there isn't a negative impact on taste |
| Moderate Health Oriented | I am generally health concerned. I seek products that compliment my desire for general well-being, and seek products that are inherently healthy. I also seek products that include ingredients that promote my health and try to avoid products that include ingredients that are not healthy for me. |
| Heavy Health Oriented | I am very health conscious. I seek products that enhance my existing good health and/or target my specific health concerns and help me to reach my health goals. |

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# Consumer Demographics
## Phase 1: On-line Survey

| Significant at the 90% C.L. | Total Sample | Mild | Moderate | Heavy |
|---|---|---|---|---|
| *Base:* | *300* | *100* | *100* | *100* |
| Ethnicity | nsd | | | |
| Age | | | | |
| *Mean Age* | *49.5* | *49.5* | *49.1* | *49.1* |
| *Mean # in Household* | *2.8* | *3.0* | *2.7* | *2.6* |
| Marital Status | nsd | | | |
| Annual Household Income | | | | |
| *Mean* | *62.2* | *60.4* | *61.0* | *65.7* |
| Level of Involvement in HH Grocery Shopping | nsd | | | |

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# Key Findings
## Phase 1: On-line Survey

- TURF Analysis Findings
  - In general, about 10-20% more Heavy Health Orientation consumers can be reached versus Mild and Moderate
  - Offering 6-7 flavors achieves maximum reach among all subgroups;  Several flavors, such as Plum, Cherimoya  and Coconut are included in the optimal lineups for all three subgroups
- Top Performers
  - Favorites most often came from the “Close-in” and “Moving-in” lists, and include Plum, Coconut, Passionfruit, Blood Orange and Acai Berry
  - Among the Mild/Moderate/Heavy Health Orientations, favorite flavors were similar; but Blood Orange was a stronger choice among Heavy consumers, while Acai Berry performed better among Mild consumers
- Appeal of Current Flavor Offerings
  - Overall, Heavy Health Orientations’ are less pleased with current flavor offerings than are the Mild and Moderate Health Orientations’

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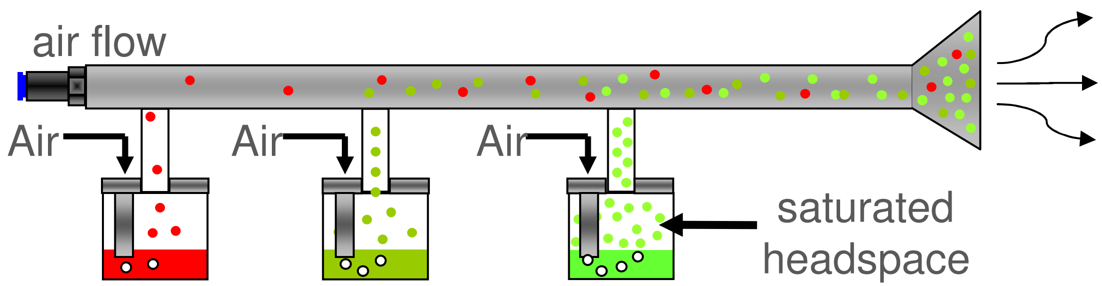
# Givaudan SmartTools™
## Combining human smell with precise instrumentation

### MiniVAS (Virtual Aroma Sythesizer)

- Aromas presented one at a time or mixed in fragrance chamber
- Integrates various aromas into a single aroma profile
- VAS software used to accurately deliver ingredient intensity
- Mathematical models to adjust for smell to taste translation




Flow rate ≈ headspace concentration

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# Givaudan SmartTools™

## Bringing more effectiveness to consumer testing

| | Traditional Method | SmartTools™ Tests |
|---|---|---|
| **Samples** | Taste a few | **Smell over 40** |
| **Sessions** | 4-5 Sessions | **1 Session** |
| **Sample Prep & Serving** | Manual<br>Labour Intensive | **Computerized**<br>**Automated**<br>**Flexible** |
| **Consumer Time** | Multiple Days | **Single Day** |
| **Validation** | N/A | **Taste** |

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# Aroma Evaluations

- Overall Appeal of Flavor for Snack
  - 9-point hedonic scale
    - Average
    - Top 2-box
    - Turf
- Flavor Fit for Snacks

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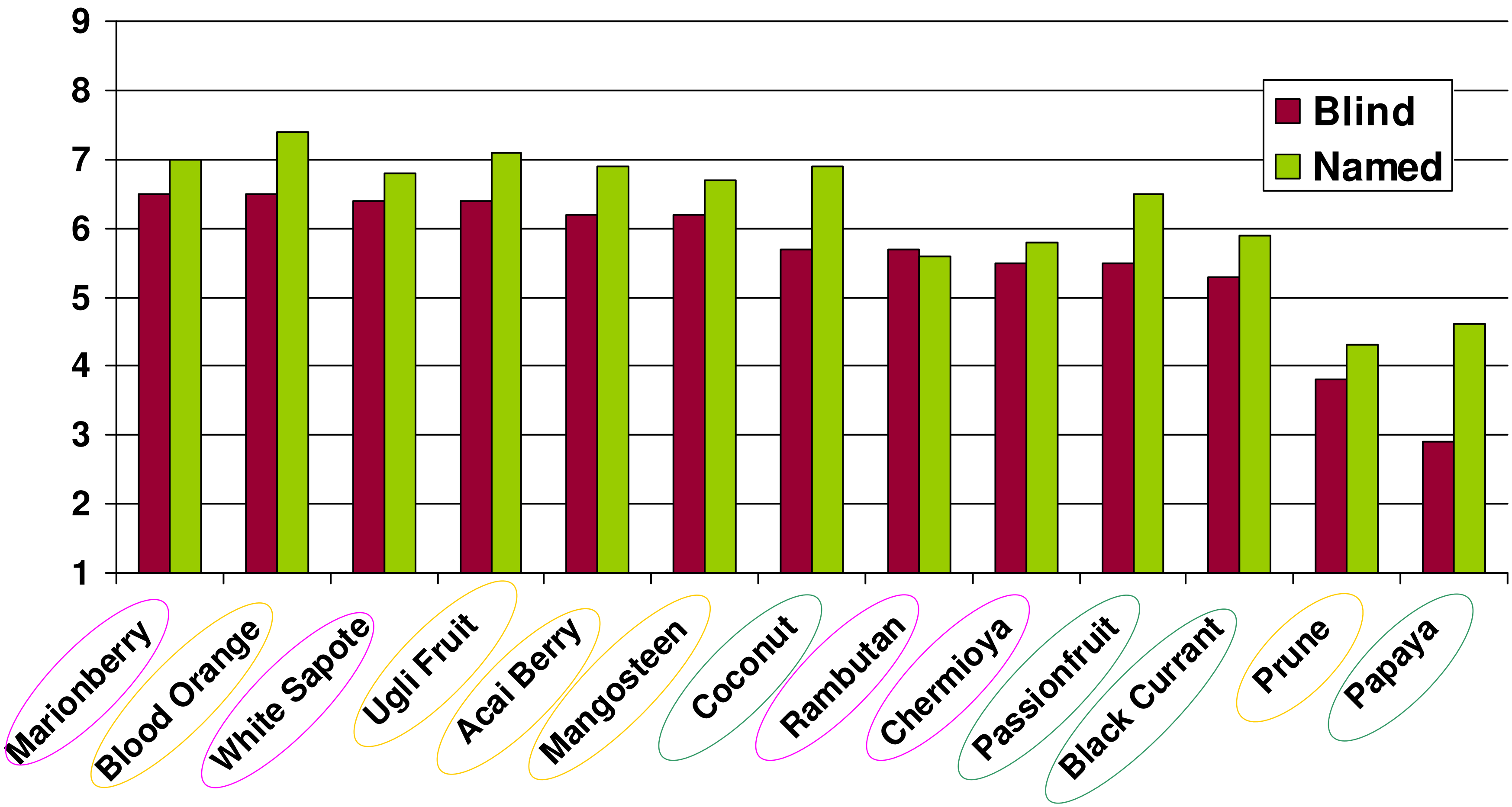
# Overall Acceptance Mean Scores
## Blind vs. Named

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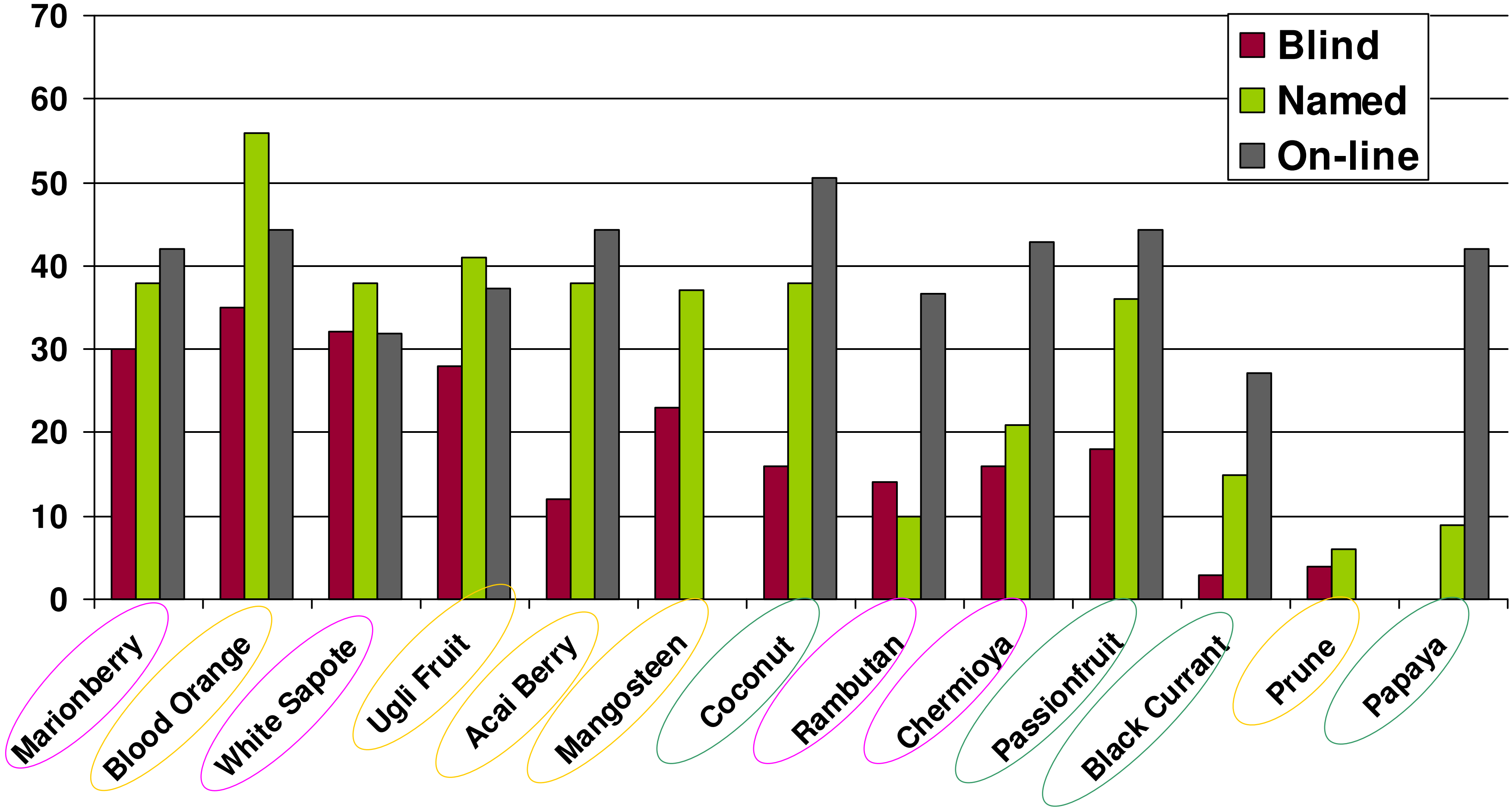
# Top 2-Box
## Blind vs. Named

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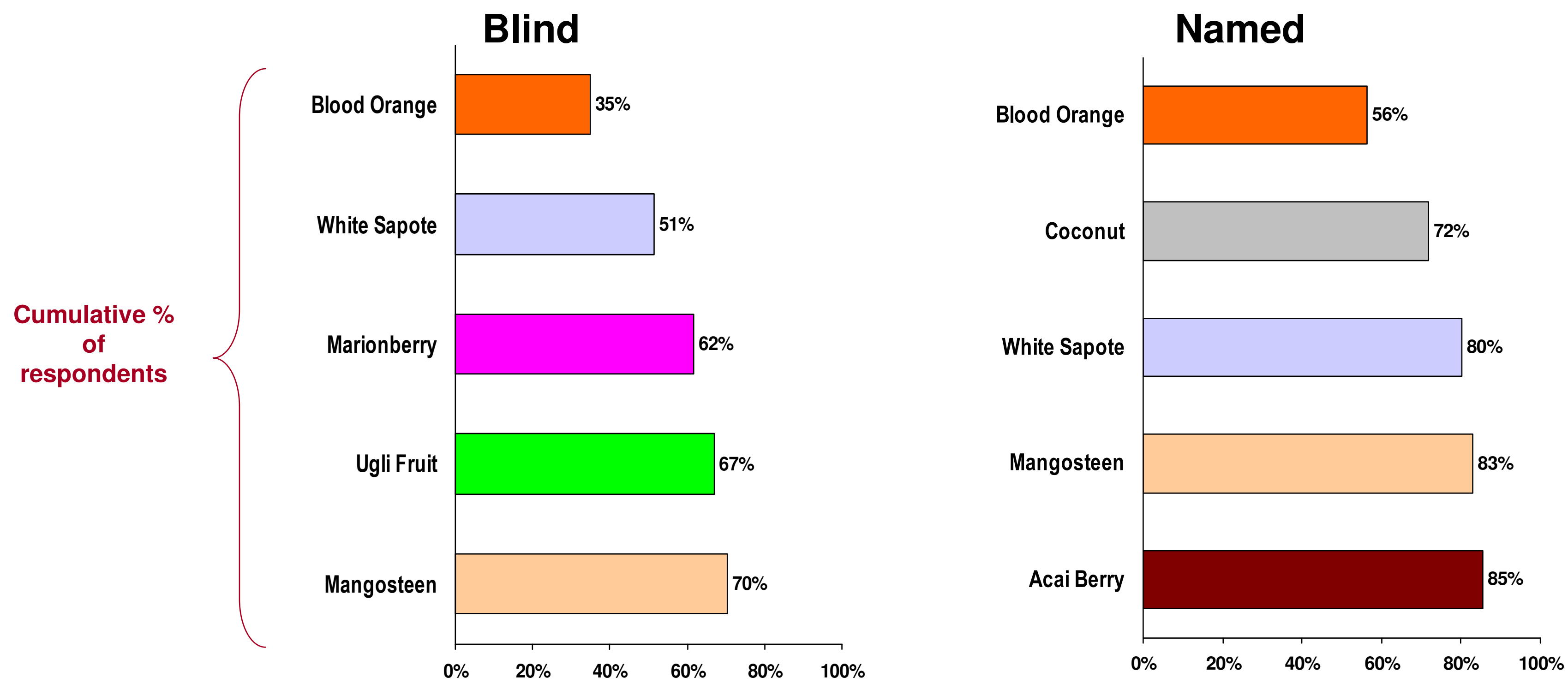
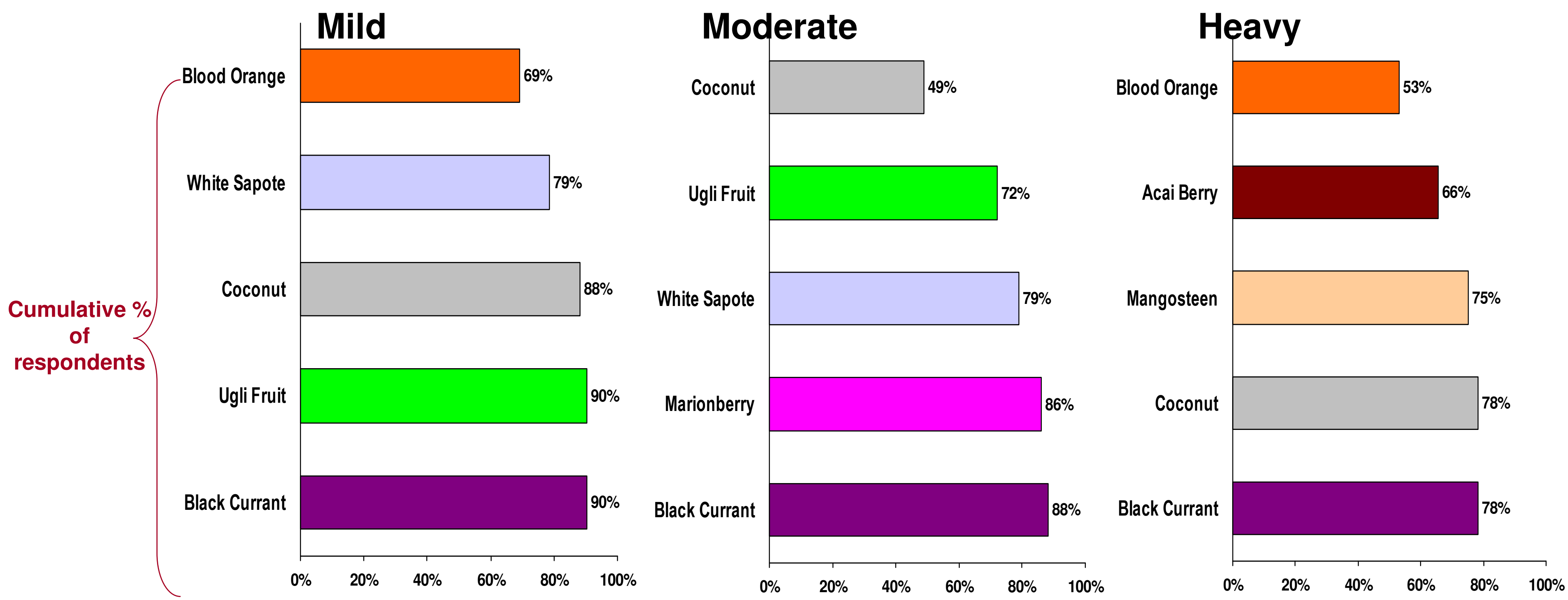
# TURF Analysis

## Blind vs. Named




Base: Total Sample (n=115)
Note: The TURF criteria for being “reached” by a particular flavor is a top 2 box overall rating

# TURF Analysis
## By Health Orientation Named




Base: Mild/Moderate (n=42), Heavy (n=31)
Note: The TURF criteria for being “reached” by a particular flavor is a top 2 box overall rating

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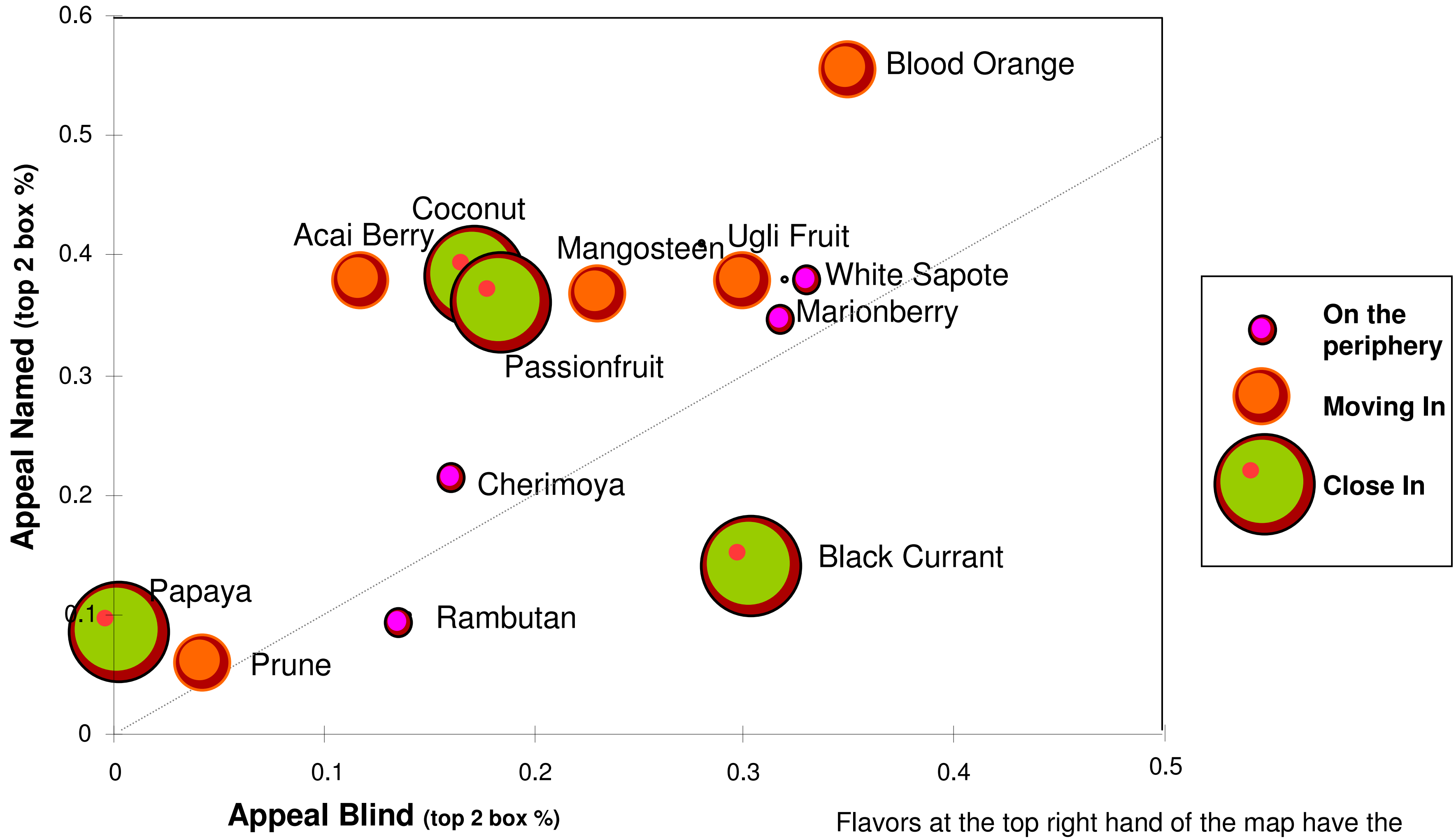
# Consumer Readiness and Appeal of Fruit Flavors




Flavors at the top right hand of the map have the highest appeal both blind and named.

Flavors above the dashed line are more appealing named than blind; Flavors below the dashed line are more appealing blind than named.

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# % Fit for Snacks

## Health Orientation Blind

| | TOTAL | MILD | MOD | HEAVY |
|---|---|---|---|---|
| **Flavor** | Snack | Snack | Snack | Snack |
| Acai Berry | 60% | 55% | 62% | 74% |
| White Sapote | 59% | 64% | 64% | 52% |
| Marionberry | 57% | 52% | 55% | 48% |
| Ugli Fruit | 43% | 52% | 48% | 26% |
| Mangosteen | 47% | 52% | 48% | 42% |
| Coconut | 48% | 60% | 43% | 55% |
| Passionfruit | 48% | 40% | 50% | 52% |
| Blood Orange | 49% | 50% | 38% | 45% |
| Rambutan | 39% | 50% | 43% | 32% |
| Cherimoya | 40% | 33% | 45% | 39% |
| Black Currant | 40% | 43% | 40% | 29% |
| Prune | 42% | 45% | 40% | 39% |

# Change in % Fit

## Blind vs. Named

| Fruits & Fruit Flavors | Snack Change when known |
|---|---|
| **Total** | |
| Papaya | 38% |
| Coconut | 37% |
| Black Currant | 22% |
| Prune | 20% |
| Passionfruit | 20% |
| Blood Orange | 16% |
| Ugli Fruit | 15% |
| Marionberry | 13% |
| Rambutan | 12% |
| Acai Berry | 10% |
| Cherimoya | 7% |
| Mangosteen | 7% |

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# Key Findings

## Phase 2: Aroma Evaluations

- Flavor acceptance changed and naming influenced acceptance of flavors
  - The identification of flavor name provides a context to the evaluation
  - Name and brief description can introduce a level of understanding and even familiarity with the flavor
- Fewer than expected differences observed between Health Orientations
  - Heavy Health Orientations find the fruit flavors less appealing versus Mild and Moderates, as reach is lower among this group
  - About 90% of Mild and Moderate Health Orientations are reached with the optimal Fruit flavor line, when flavors are named

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# Conclusions

- The consumer is ever-changing but health & wellness continues to be critical for products to deliver

- Novel flavor investigation continues to pose questions for research

- Additional thoughts are needed into how to capture consumer insights and translate to development decisions

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