Human-Centered Design Personas

Report on persona development and data mining of RTI household survey on water treatment and storage in Andhra Pradesh, India

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Introduction: What is a design persona?

A design persona is an archetypal character that is meant to represent a group of users in a role who share common goals, attitudes and behaviors when interacting with *a particular product or service* (Cooper, Reimann, & Cronin, 2007; Mulder & Yaar, 2007; Pruitt & Aldin, 2006). Most advocates of persona use as an encapsulation of user research (UX) recommend that they are presented with scenarios.[1]

There are multiple positive reports in the academic literature on persona use in technical product design and development (Dantin, 2005; Hill & Bartek, 2007; Junior & Filgueiras, 2005; Markensten & Artman, 2004). Claims of why personas are effective encapsulations of user data fall into four major categories: (1) personas increase *empathy* with the user; (2) personas provide a clear *focus* of the user audience; (3) personas facilitate improved *communication* about users and (4) personas act as an aid for *stereotype avoidance* of users. The reasons personas fulfill these enthusiastic claims, proponents argue, lies in the human ability to engage with fictional characters. Fictional character engagement can be routinely seen in how audiences respond emotionally to, and make inferences about, characters in books, television shows, and movies (Grudin, 2006). Design personas share much in common with marketing personas/profiles.

While very related to marketing personas/profiles, their key difference lies in their focus on Users (the people who will use the product) versus Consumers (the people who will buy the product). Often these groups share extensive overlap; therefore either persona type can serve both designers and marketers. However, their conception begins with different goals; where marketing personas assist in formation of strategies of positioning products against competitors and creating an understanding of factors that influence purchasing decisions, design personas are focused on how the product/service will be used by the consumer AFTER the purchasing decision has been made (Barlow-Busch, 2006).

The PATH Safe Water Project (SWP) personas are based on data collected primarily to inform marketing. Specially, the data is from a 2008 survey conducted by RTI International and summarized in their report, “The Formative Household Research Point-of-Use Household Water Treatment and Storage Products for Low- and Middle-Income Populations in Andhra Pradesh.” The personas presented in this report, therefore, are a hybrid between design and marketing personas.

The remainder of this condensed document is organized as follows. First, the segmentation model by which the personas were identified is discussed. Next, the creation of the personas is described, followed by each of the five final personas and detail breakouts of each of the persona data points. Finally, important data that could not be represented well by the personas because of the homogenous nature of the results is presented.

[1] The quantitative nature of the data in the RTI survey data however, does not support design scenarios. A design scenario in this context is a story describing a character in an activity; in the context UX research, they describe typical and significant user activities in relation to a product (Carroll, 2000; Go & Carroll, 2004; Quesenbery, 2006).

Segmentation

Much of the literature suggests that design personas be segmented first on user GOALS with the product or service, in other words, segmentation by what is the user trying to achieve while using the product or service (Mulder & Yaar, 2007).

For the RTI/SWP personas, the survey had two questions that focused on user goals/ motivations pertaining to water:

(1) Why did you choose this water source?
(2) If available, why did you NOT choose this water source?

Respondents could agree or disagree with a series of reasons provided by the enumerator, including, (a) safe/unsafe for drinking and cooking; (b) proximity to home; (c) smell and taste; (d) expense; (e) sufficient quantity; (f) reliable supply; (g) no other alternative or other reasons including caste or social reasons.

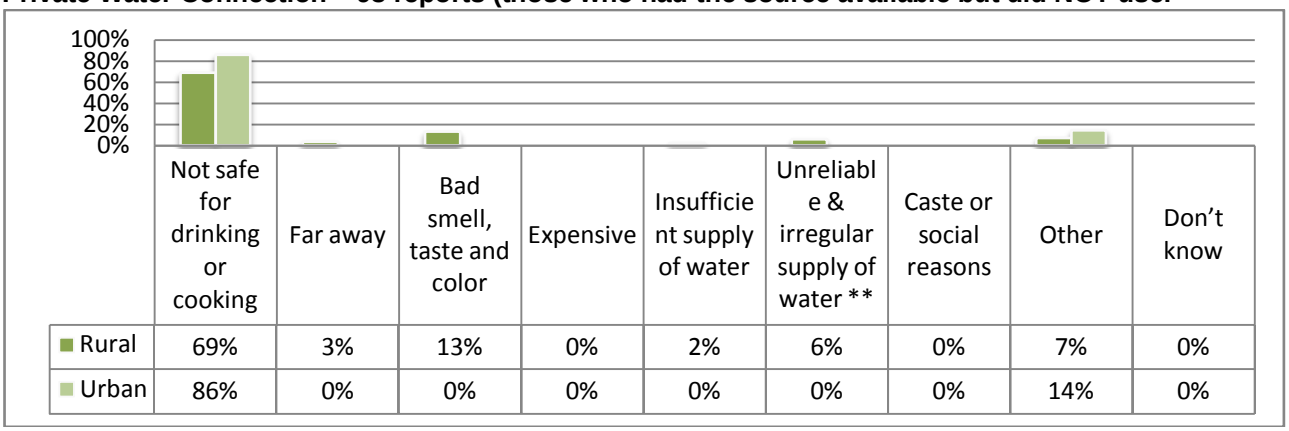
As the following charts demonstrate (Figures 1-4), across all water sources the **overwhelming primary reason was safety**. The only exception was with bottled or canned water in which the primary reason to *not* use the source was expense. While this finding is interesting, the homogenous nature of the answer made it an ineffective question to separate users; clearly a majority of users have ONE goal in mind, and that is to provide safe water for drinking and cooking.

Why NOT get water from this source?

Using the top two water sources (private water connection and public tap), the charts below serve as an example of reasons respondents gave to choose or not choose a particular water source. For the complete set of analysis for all sources see the full report..

(Note the charts below use a simple rural (N = 720) versus urban segmentation where urban is a combination of those classified as urban (N = 200), metro (N = 80) and peri-urban (N = 20).

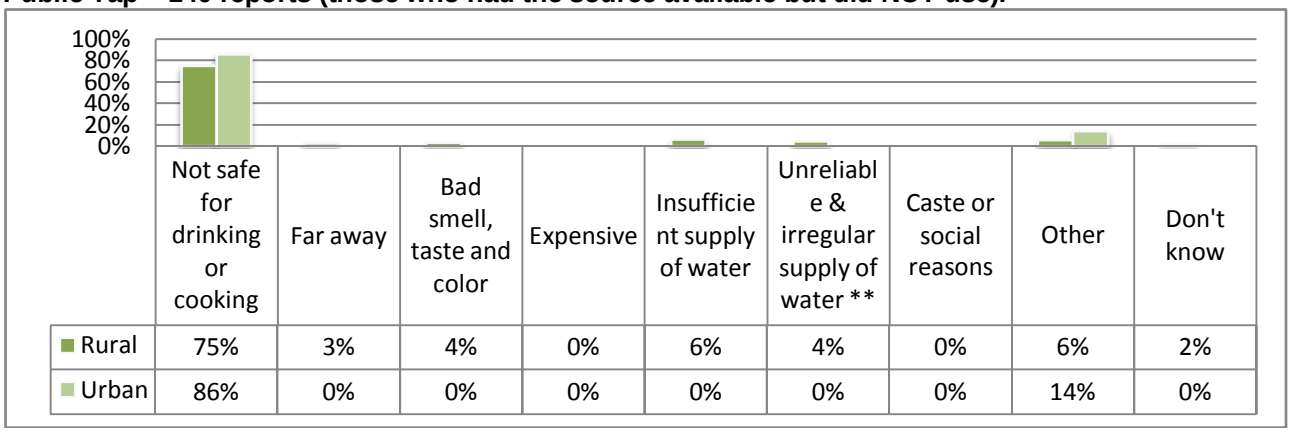
Private Water Connection – 93 reports (those who had the source available but did NOT use.



	Not safe for drinking or cooking	Far away	Bad smell, taste and color	Expensive	Insufficient supply of water	Unreliable & irregular supply of water **	Caste or social reasons	Other	Don't know
Rural	69%	3%	13%	0%	2%	6%	0%	7%	0%
Urban	86%	0%	0%	0%	0%	0%	0%	14%	0%

Figure 1: Not get from source: Private water connection
Differences analyzed Chi-square tests == * = *p* <.001, ** *p* < .05**

Public Tap – 140 reports (those who had the source available but did NOT use).

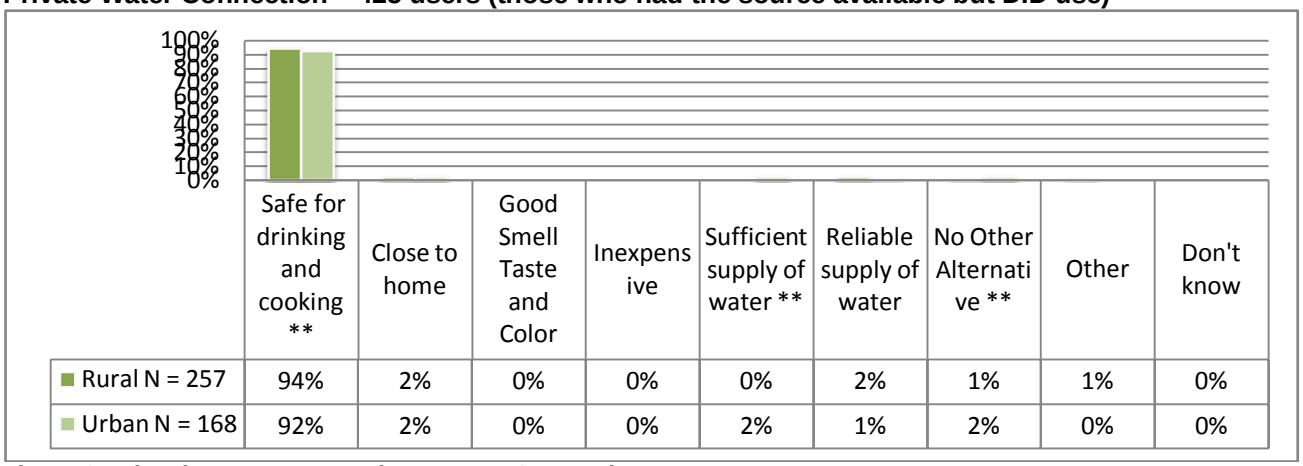


	Not safe for drinking or cooking	Far away	Bad smell, taste and color	Expensive	Insufficient supply of water	Unreliable & irregular supply of water **	Caste or social reasons	Other	Don't know
Rural	75%	3%	4%	0%	6%	4%	0%	6%	2%
Urban	86%	0%	0%	0%	0%	0%	0%	14%	0%

Figure 2: Not get from source: Public Tap
Differences analyzed Chi-square tests == * = *p* <.001, ** *p* < .05**

Why get water from this source?

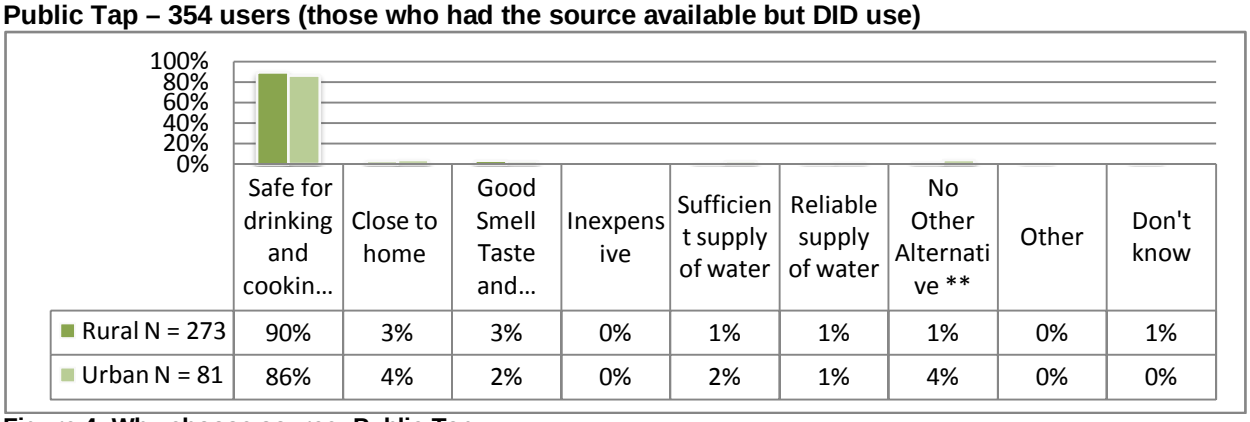
Private Water Connection – 425 users (those who had the source available but DID use)



	Safe for drinking and cooking **	Close to home	Good Smell Taste and Color	Inexpensive	Sufficient supply of water **	Reliable supply of water	No Other Alternative **	Other	Don't know
Rural N = 257	94%	2%	0%	0%	0%	2%	1%	1%	0%
Urban N = 168	92%	2%	0%	0%	2%	1%	2%	0%	0%

Figure 3: Why choose source: Private Water Connection
Differences analyzed Chi-square tests == * = *p* <.001, ** *p* < .05**

Public Tap – 354 users (those who had the source available but DID use)



	Safe for drinking and cookin...	Close to home	Good Smell Taste and...	Inexpensive	Sufficient supply of water	Reliable supply of water	No Other Alternative **	Other	Don't know
Rural N = 273	90%	3%	3%	0%	1%	1%	1%	0%	1%
Urban N = 81	86%	4%	2%	0%	2%	1%	4%	0%	0%

Figure 4: Why choose source: Public Tap
Differences analyzed Chi-square tests == * = *p* <.001, ** *p* < .05**

If the goal was "safe for drinking and cooking"...The research question then became: "what does "safe" mean to users?"

How do users define safety?

Once the primary goal of water use was established, i.e. Safety, the next research question was defining what safety meant to users. The survey does not directly ask this; however, the survey does ask users four questions that effectively establish what safety might mean: (1) Does the use of unclean or bad water cause health problems?; (2) What health problems does the use of unclean or bad water cause?; (3) How can water be contaminated in the home?; and (4) How can water be contaminated away from the home?

Does the use of unclean or bad water cause health problems?

Only 71 of the 1000 respondents (7%) disagreed with this statement, indicating that most respondents understood that there was a connection between water and health.

What health problems does the use of unclean or bad water cause?

Respondents could answer agree or disagree to ten items listed by the enumerator:

1. Cough and cold (51% agreed)
2. Watery/loose motions (66% agreed)
3. Joint pain (44% agreed)
4. Typhoid (29% agreed)
5. Diarrhea (25% agreed)
6. Skin diseases (20% agreed)
7. Indigestion, stomach cramps (19% agreed)
8. Cholera (17% agreed)
9. Headaches (17% agreed)
10. Worms in stomach (8% agreed)

How can water be contaminated in the home?

Respondents could answer agree or disagree to six items listed by the enumerator:

1. Dipping dirty hands into storage vessel (70% agreed)
2. Not cleaning storage or transport vessels (24% agreed)
3. Not treating water at home (20% agreed)
4. Flies, pets etc. touching water (11% agreed)
5. Using unclean vessel to draw water out (10% agreed)
6. Not maintaining treatment devices (2% agreed)

How can water be contaminated away from the home?

Respondents could answer agree or disagree to seven items listed by the enumerator:

1. Run of water containing feces and other dirt from roads (55% agreed)
2. Contamination with drainage water (34% agreed)
3. Industrial effluents (17% agreed)
4. Naturally present minerals and chemicals (20% agreed)
5. Lack of treatment and proper maintenance (20% agreed)
6. Waste through by people/people make it dirty (25% agreed)
7. Washing clothes or animals (8% agreed)

Answers to questions two, three and four were added up to create a total "water awareness" score in which there was a possible 23 points. Scores ranged from 0-13, with a mean score of 7.67 (SD = 1.9). To test water awareness as a possible segmentation model, people were placed into four groups:

Group 1: Minimal water Awareness – score of 5 or less = N=180 (this group was below 1 standard deviation from the mean)
Group 2: Low water Awareness – 6-7 = N=373 (slightly below 1 standard deviation from the mean)
Group 3: Average water Awareness – 8-9 = N = 268 (slightly above 1 standard deviation from the mean)

Group 4: High water Awareness 10 or more= N=179 (this group was above 1 standard deviation from the mean)

Since the motivation of the SWP is to increase water safety, this initial segmentation was based on the assumption that those who are more aware of problems related to water will be more motivated to treat water. This theory was tested by analyzing other RTI data pertaining to existing water treatment behaviors through the lens of the four water awareness groups.

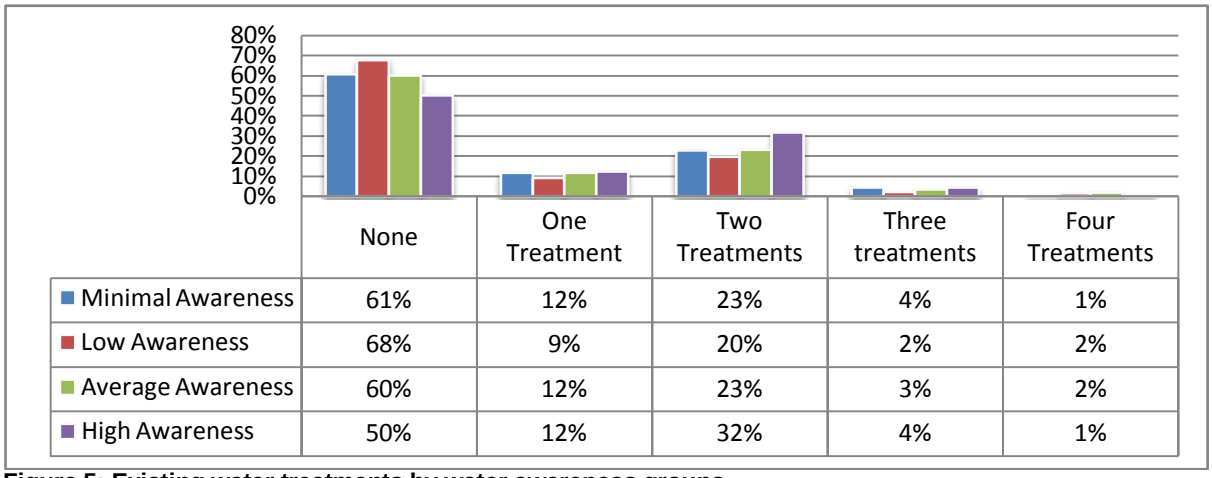
Does the water awareness groups/segmentation make sense with other RTI variables?

Existing water treatment behaviors

The survey asked respondents about existing treatment behaviors by asking what treatments they performed in the wet and dry seasons; treatments included boiling, cloth filter and chemical treatment.

We created a existing treatment score by adding all yeses (for a possible score of six) and performed an ANOVA to compare the groups. The differences were significant, $F_{(3, 999)} = 5.31$, $p < .05$. There is a positive correlation between water awareness and water treatment history, see Figure 5.

While a majority of users never treat their water, this indicates that those in the higher awareness groups have a history of greater water treatment and possibly represent a good target user for the safe water project. Additionally, this finding supported "water awareness" as a persona segmentation model.



	None	One Treatment	Two Treatments	Three treatments	Four Treatments
Minimal Awareness	61%	12%	23%	4%	1%
Low Awareness	68%	9%	20%	2%	2%
Average Awareness	60%	12%	23%	3%	2%
High Awareness	50%	12%	32%	4%	1%

Figure 5: Existing water treatments by water awareness groups

Other early adopter indicators

Asset inventory (number of durable goods owned) ,and specifically high tech assets that PATH established as indicators of early adoption, were then investigated through the lens of the water awareness groups. The survey asked "How many of [x good] do you own?" This led to some odd totals because items such as books, which people could own a lot of, and refrigerators were on the same scale. Therefore, this was re-coded to a binary question and asked do you own at least one of this [x good].

Total number of durable goods owned was significantly associated with the water awareness groups, $F_{(11, 917)} = 14.39$, $p < .05$, where higher awareness led to more types of assets owned.

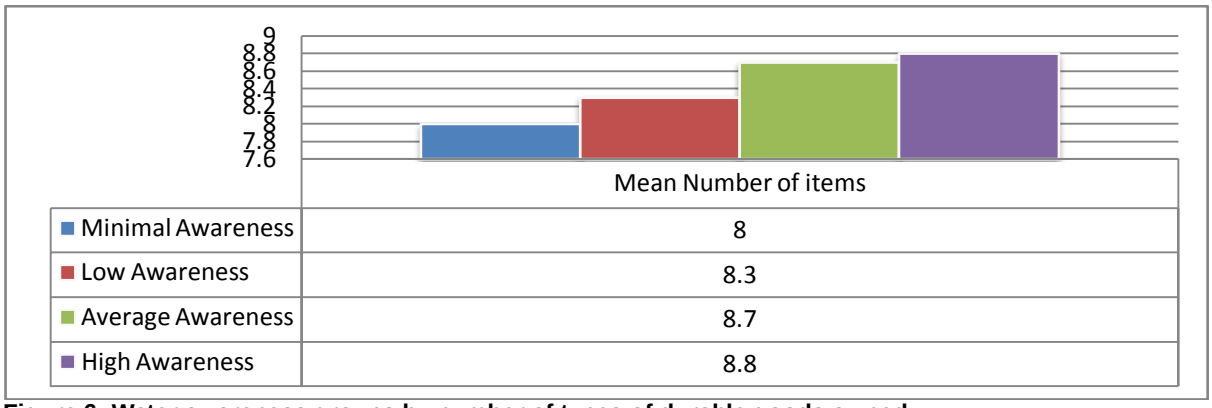


Figure 6: Water awareness groups by number of types of durable goods owned

Differences were NOT significant based on location; however, clear trends exist. See Figure 7.

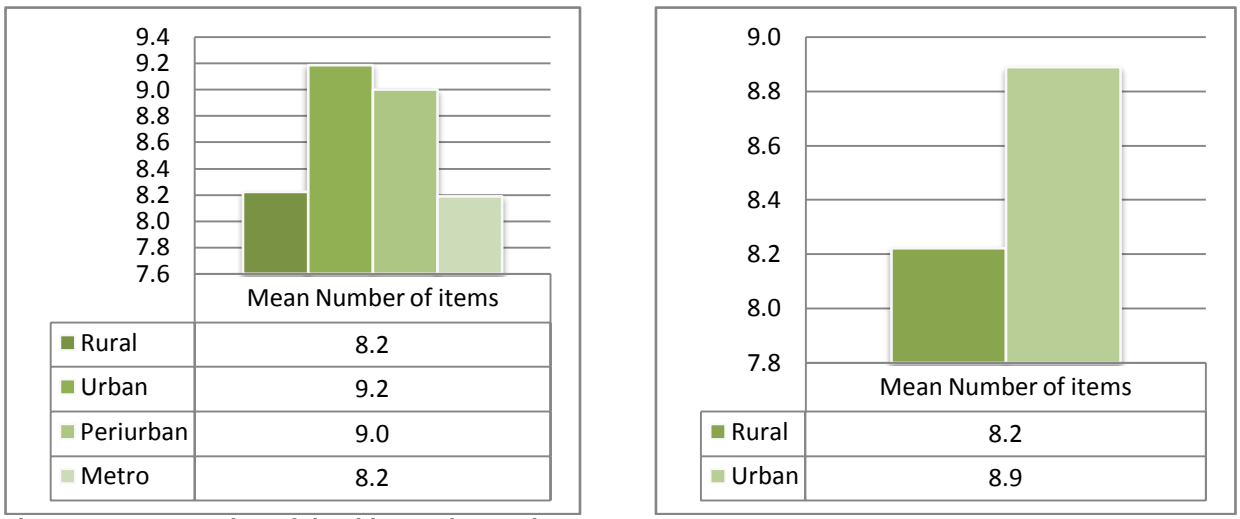


Figure 7: Mean number of durable good types by location

Summary: water awareness segmentation

Based on the above findings, the segmentation model appeared to represent a good lens by which to analyze the data for the creation of effective persona segmentation. Additionally, these findings suggest that the primary user targets for the Safe Water Project are those with higher awareness. These groups had both a history of more water treatment, greater number of durable goods types, and (obviously) a greater history of receptivity to water awareness messages.

Brief description of segmentation previously identified by PATH marketing

PATH marketing previously identified groups making between $1 and $5 dollars a day as the primary market for HWTS products. India's socioeconomic classification (SEC) is classified by urban (A1, A2, B1, B2, C, D, E1 and E2) and rural households (R1 through R4). Urban households in this model are segmented first based on occupation and education of the chief wage earner; rural households are segmented first by the education of the chief wage earner and type of house. Next, the groups are segmented further based on ownership and/or consumption of various products and services.

PATH identified five of these SEC groups as primary targets, C, R2, D, E1 and R3.

PATH combined the McKinsey Global Institute's May 2007 report on the Indian consumer market and Rama Bijapurkar's book *Winning in the Indian Market: Understanding the Transformation of Consumer*

India, to further characterize consumer profiles within each segment. Aspirers/Strivers (E1 and R3) are described as new consumers. Their goals are to "improve and escape from hardship, value hope and luck, and try to offer their children a chance at a better life". Seekers/Mainstreamers (C, R2 and D) are described as the "middle majority who seek security and value social acceptance."

These marketing segmentations are woven into the final personas. (See PATH SWF marketing reports for more information).

Methods for creating the personas

In the persona creation, the next step was to analyze the data in detail though the water awareness segmentation model – but to also look at urban versus rural differences because this was established by PATH marketing segmentation. The survey data provided eleven constructs to investigate:

Construct 1: Demographics and household information

Related to water:

Construct 2: Water sources (include distance to source)
Construct 3: Water storage (include storage capabilities and patterns)
Construct 4: Current treatment behaviors
Construct 5: Water contamination concerns and actions taken on health messages

Related to Health and Health Messages

Construct 6: Social network and where receive messages on health
Construct 7: Household illness

Other

Construct 8: Kitchen and Home
Construct 9: Household expenditures
Construct 10: Defecation and waste behaviors
Construct 11: What do the awareness groups think about other health and community problems?

The final persona presentations include information from constructs 1,2,3,4,7,8,9,10,11; however, there is further information about these constructs in the appendixes of this document that the personas do not communicate. There were minimal differences found among awareness groups for the remaining constructs (5, 6, and 9); as such, they are displayed as single information sheets on their own in this document.

Analyzing the constructs

The eleven constructs were analyzed through different statistical methods. Whenever possible, a multivariate regression model was created for the construct first. See the full report for more detail. Next, survey questions were analyzed through ANOVAs (for continuous data) and Chi-square tests (for categorical data). The results were analyzed for patterns and meaningful descriptions that could be used to identify personas using an alpha of .05.

Final persona groups

The final personas are concentrated in the upper awareness groups because these are the primary targets. The resulting breakdown is as follows:

Family 1: Primary, Urban, SEC C/D, High Awareness
Family 2: Primary, Rural, SEC R2, High Awareness
Family 3: Primary, Rural, SEC R2, Average Awareness
Family 4: Secondary, Metro, SEC E1, Low Awareness
Family 5: Tertiary, Rural, SEC R3, Minimal Awareness

Distribution of other data into the personas

As a set, the personas attempt to represent not only the segment they are in, but the dataset as a whole. As a result data points are a result of looking at the data set in conjunction with the segment. Below is a list of data points that were distributed among the personas and the reasoning behind the distribution.

For distribution of children:

- 14% reported at least one child between the ages of 0-3 (1-2 families)
- 17% reported at least one child between the ages of 4-5 (will represent with 1-2 families)
- 45% reported at least one child between the ages of 6-12 (will represent with 3-4 families)
- 42% reported at least one child between the ages of 13-18 (will represent with 3-4 families)
- 93% had at least one person between the age of 19-40 (all families)
- 14% had at least one person over 60 (will represent with one family)

For religious distribution

- 84% of all families were Hindu (will represent with all five families)
- 5% were Muslim (not represented)
- 10% were Christian (not represented)

For preferred water source distribution

- 41% used a private water connection – it was readily available to all locations (will represent with two families) – Of those 67% were yard taps (one family will have an indoor tap)
- 34% used a public tap – it was available to most urbanites (93%) and some rural (47%) (will represent with one family)
- 6% used a private well – it was available to most rural dwellers (70%) but not to urbanites or metro (will represent with one family)
- 5% used a public well – it was available to most urbanites (58%) and some rural dwellers (24%) (will represent with one family)

For preferred water storage

- 66% use Bhinda/Pots to store their water (will represent with four families)
- 27% use a 10-12 liter Jerrican (will represent with one family)
- The remaining uses other vessels, including drums, buckets and larger jerricans and are not represented by the personas

For illness

- Very few people had been sick, 71 had abdominal pain over the last two weeks. The average awareness groups were most likely to have been ill (27 of the 71 were from this group – 38%). 54 of the sick people (76%) were from rural environments. Therefore, family number three, average awareness and living in a rural environment was chosen to describe the data about illness.

For house type distribution

- Most houses (82%) were made from pucca materials; therefore four families (71%) will have or live in pucca houses (will represent with five families)
- 8% were katcha houses and 10% were semi-pucca; therefore, one house will be semi-pucca but katcha houses will not be represented.

Names

- All names were Telugu names found online:

All Telugu first names found at: http://www.saradaga1.com/telugu_baby_names/default.aspx?

Uppu family

Head of house: **Himu**
Spouse (Respondent): **Hema**

Marketing segmentation:
- SEC C/D (Seekers / Mainstreamers)
- Middle majority who seek security and value social acceptance

"I always desire to have a healthy family, and I think people who treat their water have good knowledge about health and have good habits."

The Uppu family seeks security and highly value social acceptance. While they have a relatively good understanding about what causes contamination in water, and the problems contamination can cause, they cannot always afford the time or money to properly treat their drinking water.

URBAN High Awareness

Water source

High Awareness groups who are very satisfied with their preferred source: low — high **45%**

The Uppu's use a **private water connection** from a tap **inside their house**

- The family uses approximately 94 liters a day
- They pay about 20 Rupees a month for their water
- They also pay, on average, 6 Rupees a month to repair and maintain the tap

KEY contamination concerns for Private Water Connection (PWC):
- Reddish/brackish water - (9.3% of those with PWC available)
- Fluoride - (6.3% of those with PWC available)
- Salinity - (3.3% of those with PWC available)

Water storage

Main storage vessels are 10-12 liter clay pots
- They partially cover the vessels
- They store the water vessels on the floor; two vessels are typically full in the dry season
- They access the water by dipping with their hands using a cup, but do not use the cup for drinking

The Uppu's chose this storage vessel because **"the material keeps the water cool."**

Water storage cleaning

- They clean the vessels daily
- They use ONLY water to clean

Current water treatment behavior

Urban + High Awareness group's likelihood to treat water: low — high **55%**

- Uses plastic sieve filter
- Will treat in both the wet & dry seasons
- Bought the plastic sieve filter from a mobile sales person

Health Messages Received

Total number of health messages received by Urban + High Awareness groups: low — high **40%**

Number of water related health messages received by Urban + High Awareness groups: low — high **37%**

Water Awareness: low — high **48%**

Key persona segmentations differences:
- Lives in an urban (not metro) environment
- Has a high understanding about water contamination

Personal: Hema

Age: 33
Education: Completed higher secondary school
Newspapers: Yes, can read

Employment
Respondent: Does not work
Head of house: Works as a maintenance worker at the Nagarjunasagar Dam

Identification
Religion: Hindu
Caste: OBC

Living situation
Where: Nagarjunasagar (Urban /not metro)
Husband: Himu, age 38
Daughter: Himaja, age 13
Son: Hasith, age 11

Home
Ownership: Owns
Rooms: Two rooms Pucca house
Roof: Slate
Walls: Stone

Kitchen
Location: Inside home with partition
Stove: Gas

Sanitation
Defecation: Toilet
Waste disposal: Solid Waste Pit

Key Assets
Average: **9 Items**
Highest value: Refrigerator

What is the most important improvement you would like to see over the next 10 years?
1. Irrigation (63%)
2. Electricity (26%)
3. Roads (23%)

Urban + High Awareness respondents (Uppa family) are primary targets representing about 7% of the survey population

Uppa Family Detail

Names: The "**U**ppa" name corresponds to the family's **u**rban location. The first names start with H to correspond to their "high awareness" classification. Hema is Telugu for gold, Himu is Telugu for snow.

Marketing segmentation: SEC C/D are segments previously identified by PATH. The Mainstreamer category is derived from Rama Bijapurkar's model described in his book, "Winning in the Indian Market: Understanding the Transformation of Consumer India." The Seeker category is derived from the McKinsey's Global Institute's model in the May 2007 report.

This quote is paraphrased from two participants in the Rapid Assessment Process (RAP) focus groups study; the participants are identified as Female, SEC R3 from Vauilathuta and Female, SEC R2 from Nachupally.

Family description: the first sentence is from the Bijapurkar's description of mainstreamers. The second sentence captures their status as a high awareness family, and reflects a finding from the RAP study, that participants expressed a desire to filter water but identified time and costs as primary obstacles.

45% of those in the high awareness group reported being 'very satisfied' with their source, regardless of the source. This is significantly lower than any other awareness group.

58% use a PWC with an inside tap in this group - the highest of any group.

Usage is based on mean for a family of four using a PWC.

The mean cost for an urban family with an inside tap was 20 Rs a month, mean for maintenance was 6.37 Rs. These describe the key contaminations reported by those who had a PWC available to them

Clay pots were chosen for this family because they were the most likely to identify water coolness as their primary reason to choose a storage vessel (47%); clay is associated with water coolness.

While 92% covered in this persona group - 8% only partially covered which was the most of any group.

59% of this persona group and 51% of users of this type of vessel store them on the floor.

80% of bhinda/pot storage vessel users accessed water this way. While 75% also used the cup for drinking, the high awareness groups were the least likely to do so.

58% of this persona group (high awareness + urban) use a filter in the wet season; 35% use a filter in the dry season. 56% of the filter users use a plastic sieve type and 54% purchased from a mobile sales person.

83% of this group clean their vessels daily; 54% clean with ONLY water.

60% of High awareness group + urban + PWC users treated their water in some way; 50% of the high awareness group in general did - the total of 55% is the split between the two.

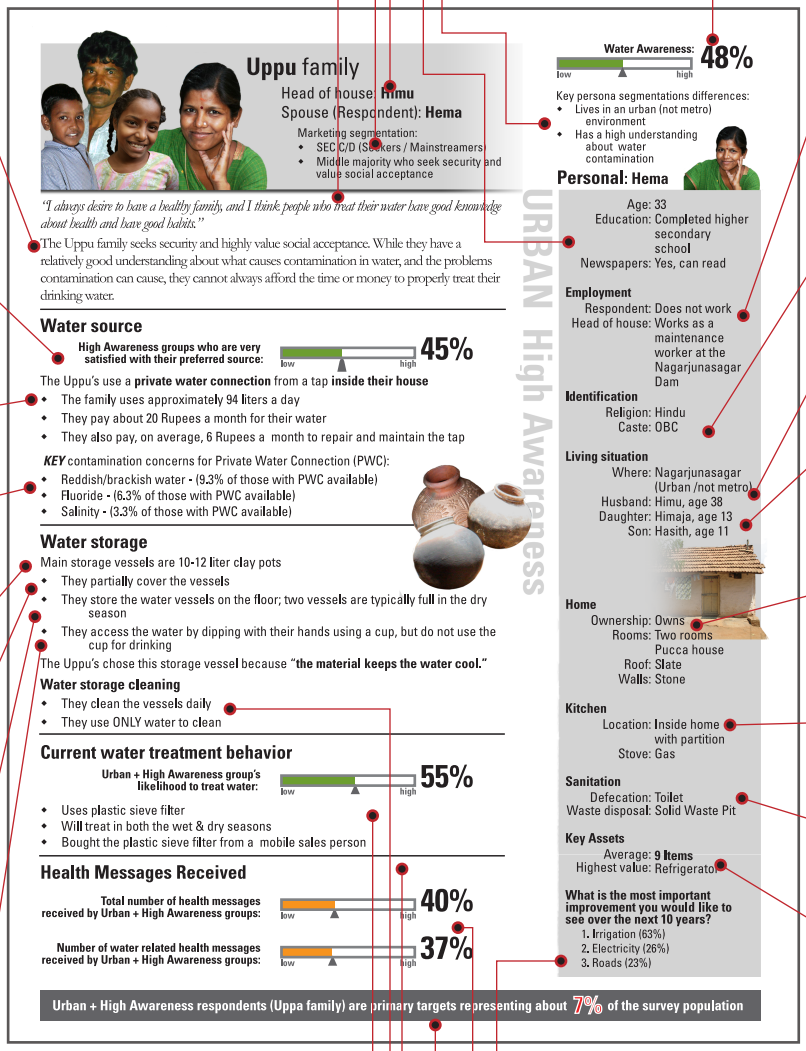
Spouse mean age for this persona group (high awareness + urban) was 34.2 - high awarness families represent the two youngest groups.

In this persona group, 39% have no education, 41% have some or completed primary school, and 17% have some or completed secondary school. Hema's education is inflated here to emphasize that this is the group with the least amount of respondents with no education.

61% of head of households in this persona group can read a newspaper, at least a little; this represents the highest percentage of any group.

While 63% of high awareness families live in rural environments, 29% live in urban (the most of any group), 3% live in peri-urban, and 4% live in metro environments. (The breakdown of the sample is 72% rural, 18% urban, 2% peri-urban and 8% metro).

Water Awareness: this reflects the number of correct identification of the causes and effects of water contamination. As a high awareness group, this persona group scored very high compared to the survey population with a mean of 10.5 out of 23 possible correct. (Rounded up to 11/23 = 48%).



83% of spouses do not work in this persona group
Head of house: 37% worked as factory workers, 17% as skilled artisans. This job is fiction based on the location.

85% of this persona group are Hindu-69% are classified as OBC caste.

Location was chosen to represent an urban but not metro area.

Average family size was 4.2 in this persona group. 46% of households in this group have at least one child age 6-12 and 44% have one age 4-5.

58% of this persona group own their home. Mean size is 2.4 rooms. Materials were chosen as common for pucca houses.

77% of this persona group had kitchens inside their homes, 73% had gas stoves.

87% of this persona group had private toilets, 56% used solid waste pits.

9 items is the highest number of reported durable goods by any persona group. While only 14% in this group own refrigerators, this is the highest of any group.

NOTE that durable goods were counted by type, for example, if the respondent owned 30 books and one television, this would be counted as **2** durable good items by type.

These are the top three areas for improvement reported by this persona group (high awareness + urban); percentages indicated number of those who identified the area for improvement.

Of a total of 12 possible health messages, this persona group reported receiving a mean of 4.82 messages (40%), and of five water related health messages they received a mean of 1.86 (37%).

The combination of urban + high awareness comprises 7% of the survey population. High awarness respondents comprise 18% of the survey population; urban residents also comprise 18%.

Raju family

Head of house: **Harshal**
Spouse (Respondent): **Hasini**

Marketing segmentation:
- SEC R2 (Seekers / Mainstreamers)
- Middle majority who seek security and value social acceptance

Water Awareness: **48%**

low — high

Key persona segmentations differences:
- Live in an rural environment
- Has a high understanding about water contamination

We can avoid germs by purifying water. So we filter the water, mostly in the wet season or when people in the family are sick."

The Raju's highly value family responsibility. They feel it is very important to garner respect from their friends and neighbors. They report receiving more messages about health related information from family and friends compared to other persona families.

RURAL High Awareness

Water source

High Awareness groups who are very satisfied with their preferred source: **45%** (low — high)

The Rajus's use a **public well** located 14 minutes from their house
- The family typically uses approximately 68 liters a day
- Hasini and her older daughter collect the water twice a day using 10-12 liter plastic or metal bhindas
- The family is not required to pay for the public well water

KEY contamination concerns for Public Wells (PubW):
- Salinity - (36.9% of those with PubW available)
- Fluoride - (2.5% of those with PubW available)
- Reddish/brackish water - (2.4% of those with PubW available)

Water storage

Main storage vessels are 10-12 liter wide mouth copper bhindas
- They cover the vessels
- Stored slightly elevated, but below 3 feet off the ground; typically three storage vessels are full in the dry season
- They access the water by dipping with their hands and a cup AND use the cup for drinking

The Raju's chose this storage vessel because **"the material keeps the water cool."**

Water storage cleaning
- They clean the vessels daily
- They use ONLY water to clean

Current water treatment behavior

Rural + High Awareness group's likelihood to treat water: **51%** (low — high)
- Use simple cloth filter
- Will treat in the wet season ONLY
- Bought the cloth filter from a mobile sales person

Health Messages Received

Total number of health messages received by Rural + High Awareness groups: **45%** (low — high)

Number of water related health messages received by Rural + High Awareness groups: **43%** (low — high)

Personal: Hasini

Age: 33
Education: Some primary school
Newspapers: Yes, can read with difficulty

Employment
Respondent: Does not work
Head of house: Works on his own small farm

Identification
Religion: Hindu
Caste: OBC

Living situation
Where: Nachupally
Husband: Harshal, age 42
Son: Hemal, age 14
Daughter: Hita, age 9
Daughter: Himantha, age 5

Home
Ownership: Owns
Rooms: Two rooms Pucca house
Roof: Concrete
Walls: Concrete

Kitchen
Location: Outside the house in open air
Stove: Traditional Wood Burning

Sanitation
Defecation: Toilet
Waste disposal: Solid Waste Pit

Key Assets
Average: **8 Items**
Highest value: Bicycle

What is the most important improvement you would like to see over the next 10 years?
1. Irrigation (42%)
2. Better water supply (34%)
3. Electricity (18%)

Rural + High Awareness respondents (Raju family) are primary targets representing about 11% of the survey population

Raju Family Detail

Names: The "**R**aju" name corresponds to the family's **r**ural location. The first names start with H to correspond to their "high awareness" classification. Hasini is Telugu for joyful, Harshal is Telugu for lover.

Marketing segmentation: SEC R2 is a segment previously identified by PATH. The Mainstreamer category is derived from Rama Bijapurkar's model described in his book, "Winning in the Indian Market: Understanding the Transformation of Consumer India." The Seeker category is derived from the McKinsey's Global Institute's model in the May 2007 report.

This quote is paraphrased from two participants in the Rapid Assessment Process (RAP) focus groups study; the participants are identified as Female, SEC R3 from Vauilathuta and Male, SEC D/E from Varigupally.

Family description: the first sentence is from the Bijapurkar's description of mainstreamers which describes the segment motivation as family responsibility and conformity. This persona group reported the highest incidence of receiving health messages from family and friends.

45% of those in the high awareness group reported being 'very satisfied' with their source, regardless of the source. This is significantly lower than any other awareness group.

Only 13% of this persona group (high awareness + rural) use a public well (PubW) - mean distance for PubW was 14 min; however the most common water source was a public tap (39%) for this group. This family is representing PubW well users because high awareness groups were the most likely to use a PubW if available.

Usage is based on mean for a family of five using a PubW. Respondents using a public well did not report an associated cost.
These are the key contamination concerns for PubW users.

65% of this persona group uses 10-12 liter bhindas. Higher awareness groups were more likely to give their reason for vessel choice as water coolness. 93% of this group covered their vessels. Most in this persona group (55%) actually store their vessels on the floor, 40% elevate them which is the highest of any persona group. 80% of bhinda/pot storage vessel users accessed water this way, 73% in this persona group (high awareness + rural) accessed their water this way, and 75% also used the cup for drinking.

41% of this persona group use a filter in the wet season; (Most, 54%, never treat), 34% use a filter in the dry season. 56% of the filter users use a plastic sieve type and 54% purchased from a mobile sales person.

92% of this persona group clean their vessels daily; 54% clean with ONLY water.

52% of High awareness group + rural + PubW respondents treated their water in some way; 50% of the high awareness group in general did - the total of 51% is the split between the two.

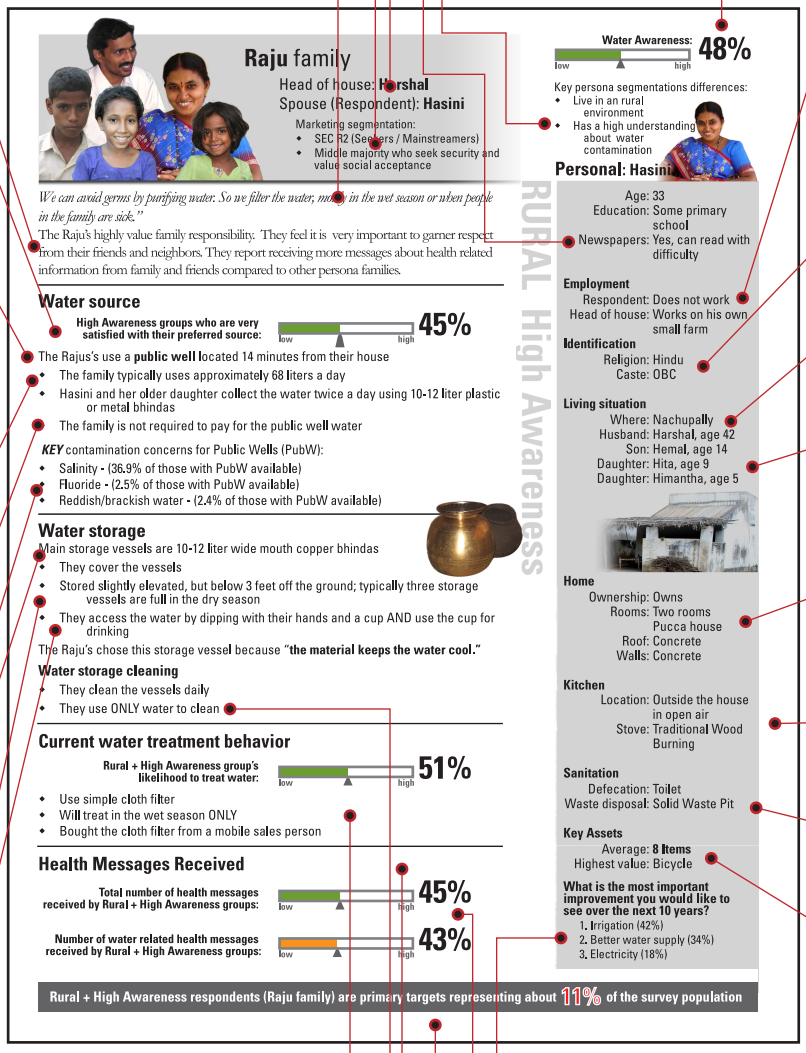
Spouse mean age for this persona group (high awareness + rural) was 33.6- high awarness families represent the two youngest groups.

In the high awareness + rural group, 48% have no education, 35% have some or completed primary school, and 11% have some or completed secondary school.

49% of head of households in this persona group can read a newspaper.

63% of high awareness families live in rural environments, 29% live in urban, 3% live in peri-urban, and 4% live in metro environments. (The breakdown of the sample is 72% rural, 18% urban, 2% peri-urban and 8% metro).

Water Awareness: this reflects the number of correct identification of the causes and effects of water contamination. As a high awareness group, this persona group scored very high compared to the survey population with a mean of 10.5 out of 23 possible correct. (Rounded up to 11/23 = 48%).



49% of spouses do not work in this persona group.
Head of house: 19% worked on others farms, 19% worked as skilled artisans, 15% worked on own small farm.

82% of this persona group are Hindu-65% are classified as OBC caste.

Nachupally was the only SEC R2 locaion from the RTI study.

Average family size was 4.5 in this persona group. 47% of households in this group have at least one child age13-18, 42% have at least one child age 6-12 and 14% have one age 4-5.

86% of this group own their home. Mean size is 2.4 rooms. Materials were chosen as common for pucca houses.

36% of this persona group had kitchens outside in open air, 62% of this persona group used a wood burning stove (common for wood-burning stove).

50% of this persona group had private toilets, 44% used solid waste pits.

Televisions and bicycles were the top two valued items. 71% owned a bicycle, 91% owned a television.

NOTE that durable goods were counted by type, for example, if the respondent owned 30 books and one television, this would be counted as **2** durable good items by type.

These are the top three areas for improvement reported by rural + high awareness groups; percentages indicated number of those who identified the area for improvement.

Of a total of 12 possible health messages, the rural high awareness groups reported receiving a mean of 5.35 messages (45%), and of five water related health messages they received a mean of 2.13 (43%).

The combination of rural + high awareness comprises 11% of the survey population. High awareness respondents comprise 18% of the survey population; rural residents comprise 72%.

Rangan family

Head of house: **Adi**

Spouse (Respondent): **Aditi**

Marketing segmentation:

- SEC R2 (Seekers / Mainstreamers)
- Middle majority who seek security and value social acceptance

"We will definitely purify water when our children are sick, but cannot do it all year."

The Rangan family is working hard to so they can afford to send all their children to school. Recently, both Aditi and her son Aman were sick for four days and had to go into the doctor where they were told the illness could be due to bad water. She would like to convince Adi to buy a ceramic filter for their drinking water.

Water source

Average Awareness groups who are very satisfied with their preferred source: 46% (low – high)

The Rangans's use a **public tap** located 4 minutes from their house

- The family uses approximately 150 liters a day
- Aditi collects the water once a day using the storage jerricans which requires several trips
- The family is not required to pay for the public water tap

KEY contamination concerns for Public Tap (PubT):

- Reddish/brackish water - (10.4% of those with PubT available)
- Fluoride - (5.8% of those with PubT available)
- Salinity - (4.5% of those with PubT available)

Water storage

Main storage vessels are 10-12 liter narrow mouth plastic jerricans

- They cover the vessels
- They store the water vessels on the floor
- Three storage vessels are typically full in the dry season
- They access the water by pouring

The Rangan's chose this storage vessel because **"they are easy to clean"**

Water storage cleaning

- They clean the vessels daily
- They use ONLY water to clean

Current water treatment behavior

Average Awareness group's likelihood to treat water: 39% (low – high)

- Boil water
- Will treat only in the wet seasons or when people in the family are sick
- On average they boil for 15 minutes, and use the water for everyone in the family

Health Messages Received

Total number of health messages received by Average Awareness groups: 40% (low – high)

Number of water related health messages received by Average Awareness groups: 38% (low – high)

RURAL Average Awareness

Water Awareness: 37% (low – high)

Key persona segmentations differences:

- Lives in an rural environment
- Has an average understanding about water contamination

Personal: Aditi

Age: 34
Education: Completed some primary school
Newspapers: Yes, can read with difficulty

Employment

Respondent: Does not work
Head of house: Works as a wage laborer on other's farm

Identification

Religion: Hindu
Caste: OBC

Living situation

Where: Nachupally
Husband: Adi, age 43
Son: Aman, age 9
Daughter: Aakriti, age 6
Daughter: Aasrita, age 4
Daughter: Aasha, age 1

Home

Ownership: Owns
Rooms: Two rooms Pucca house
Roof: Slate
Walls: Stone

Kitchen

Location: Inside home with partition
Stove: Gas

Sanitation

Defecation: Toilet
Waste disposal: Solid Waste Pit

Key Assets

Average: **8 Items**
Highest value: Television

What is the most important improvement you would like to see over the next 10 years?

1. Irrigation (30%)
2. Roads (17%)
3. Sanitation and Hygiene (14%)

Average Awareness respondents (Rangan family) are primary targets representing about 27% of the survey population

Rangan Family Detail

Names: The "**R**angan" name corresponds to the family's **r**ural location; however the family represents all locations for those in the average awareness classification. The first names start with A to correspond to their "average awareness" classification. Aditi is Telugu for mother of the Gods, Adi is Telugu for first.

Marketing segmentation: SEC R2 is a segment previously identified by PATH. See Raju family detail for more information.

This quote is paraphrased from two participants in the Rapid Assessment Process (RAP) focus groups study; the participants are identified as Male, SEC D/E from Mangasumudram and Female, SEC R2 from Nachupally.

Family description: this family was chosen to represent recent water-borne illness; however, only 7% of the survey population had been sick in the last 2 weeks. The RTI report indicated that treatment was triggered most often by sickness.

46% of those in the average awareness group reported being 'very satisfied' with their source, regardless of the source.

27% of this persona group (average awareness) used a Public Tap (PubT) - mean distance to PubT was 4 min; however the most common water source for this persona group was a PWC (48%).

Usage is based on mean for a family of six using a PubT. Respondents using a PubT did not report an associated cost. These are the key contamination concerns for PubT users.

63% of this persona group (average awareness) uses 10-12 liter bhindas; 31% use 10-12 liter jerricans. However, if looking at the combination of average awareness + PubT user + rural location, 35% used jerricans which represents the highest percentage of a combination group.

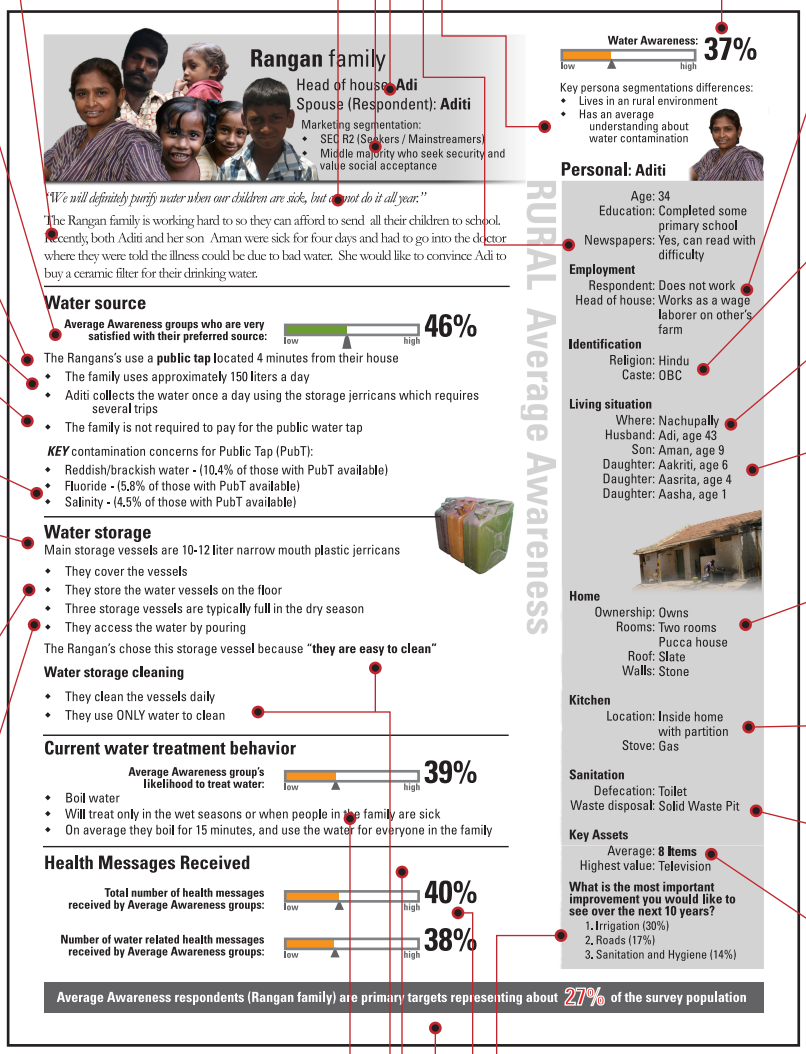
96% of this persona group covered their vessels. Jerricans were most often stored on the floor (66%). Three storage vessels was the mean for a family of six.

While only 11% of jerrican storage vessel users accessed water this way; mouth type (narrow mouth) was positively associated pouring.

In reality, 76% in this persona group (average awareness) accessed their by dipping with hands and a cup.

While only 13% of this persona group boil wet season - this family was chosen to represent boiling to emphasize the RTI finding of illness triggering treatment. (Most, 60%, never treat), 32% use a filter in the wet season, and 26% use a filter in the dry season.
89% of this persona group (average awareness) clean their vessels daily; 54% clean with ONLY water. Jerricans were positively associated with being easy to clean.

39% of Average awareness group + rural + PubT respondents treated their water in some way; 40% of the average awareness group in general did - the total of 39% is the lower number.



Spouse mean age for this persona group (average awareness) was 35.8-skewed down to emphasize that higher awareness is associated with youth.

In the average awareness group, 47% have no education, 30% have some or completed primary school, and 19% have some or completed secondary school.

51% of head of households in this persona group can read a newspaper.

71% of average awareness families live in rural environments, 18% live in urban, 2% live in peri-urban, and 9% live in metro environments. (The breakdown of the sample is almost identical - 72% rural, 18% urban, 2% peri-urban and 8% metro).

Water Awareness: this reflects the number of correct identification of the causes and effects of water contamination. As the average awareness group, this persona group scored a mean of 8.6 out of 23 possible correct. (8.6/23 = 37%).

56% of spouses do not work in this persona group.
Head of house: 19% worked as skilled artisans, 15% worked on other's farm as wage labor.

88% of this persona group are Hindu-65% are classified as OBC caste.

Nachupally was the only SEC R2 location from the RTI study.

Average family size was 4.6 in this persona group (the largest of any persona groups). 22% of households in this group have at least one child age 0-3, 20% have at least one child age 4-5, and 55% have at least one age 6-12.

78% of this group owns their home. Mean size is 2.5 rooms. Materials were chosen as common for pucca houses.

63% of this persona group had kitchens inside with a partition. 75% had a gas stove.

65% of this persona group had private toilets, 43% used solid waste pits.

Televisions and bicycles were the top two valued items. 74% owned a bicycle, 91% owned a television.

NOTE that durable goods were counted by type, for example, if the respondent owned 30 books and one television, this would be counted as 2 durable good items by type.

These are the top three areas for improvement reported by average awareness groups in all locations; percentages indicated number of those who identified the area for improvement.

Of a total of 12 possible health messages, the average awareness groups reported receiving a mean of 4.83 messages (40%), and of five water related health messages they received a mean of 1.88 (38%).

Average awareness respondents (in all locations) comprise 27% of the survey population.

Murty family

Head of house: **Lalit**
Spouse: **Lasya**

Marketing segmentation:
- SEC E1 (Aspirers/strivers)
- New consumers who value hope, trying to offer their children a better life

Water Awareness: 28%

low — high

Key persona segmentations differences:
- Lives in a metro environment
- Has an low understanding about water contamination

"We need more money if we want to buy good products which purify water. Right now, we do not have the money to buy them."

The Murtys main goal is to provide a better life for their children. To help attain this goal they send their children to English-medium schools, spending more on education than any of the other four persona families.

METRO Low Awareness

Water source

Low Awareness groups who are very satisfied with their preferred source: 56%

low — high

The Murty's use a **private water connection** located **in their yard**

- The family uses approximately 115 liters a day
- Lasya collects the water once a day (requiring several trips) using 10 liter broad mouth plastic and stainless steel bhindas
- The family pays 125 Rupees a month, plus an average of 36 Rupees a month for repair and maintenance of the private water connection

KEY contamination concerns for Private Water Connection (PWC):
- Reddish/brackish water - (9.3% of those with PWC available)
- Fluoride - (6.3% of those with PWC available)
- Salinity - (3.3% of those with PWC available)

Water storage

Main storage vessels are 10-12 liter wide mouth steel bhindas
- They cover the vessels
- They store the water vessels on the floor; two vessels are typically full in the dry season
- They access the water by dipping with their hands and a cup AND use the cup for drinking

The Murty's chose this storage vessel because **"they are easy to clean"**

Water storage cleaning

- They clean the vessels daily
- They use soap AND water

Current water treatment behavior

Low Awareness group's likelihood to treat water: 32%

low — high

- The Murty's are unlikely to treat their water; however, if they did treat, low awareness groups usually choose boiling in the wet season

Health Messages Received

Total number of health messages received by Low Awareness groups: 41%

low — high

Number of water related health messages received by Low Awareness groups: 38%

low — high

Personal: Laxman (son)

Age: 19
Education: In his first year of college
Newspapers: Yes, can read

Employment
Respondent: College student
Head of house: Non-farm construction worker
Spouse: Hotel housekeeper

Identification
Religion: Hindu
Caste: OBC

Living situation
Where: Hyderabad (metro)
Father: Lalit age 44
Mother: Lasya, age 37
Sister Latha, age 13

Home
Ownership: Owns
Rooms: Two rooms Pucca house
Roof: Concrete
Walls: Concrete and Brick

Kitchen
Location: Inside home with partition
Stove: Gas

Sanitation
Defecation: Toilet
Waste disposal: Solid Waste Pit

Key Assets
Average: **8 Items**
Highest value: Television

What is the most important improvement you would like to see over the next 10 years?
1. Roads (25%)
2. Irrigation (19%)
3. Household water supply (14%)

Low awareness respondents (Murty family) are secondary targets representing about 37% of the survey population

Murty Family Detail

Names: The "**M**urty" name corresponds to the family's **m**etro location; however the family represents all locations for those in the low awareness classification. The first names start with L to correspond to their "low awareness" classification. Lasya is Telugu for smile/laugh, Lalit is Telugu for handsome.

Marketing segmentation: SEC E1 is a segment previously identified by PATH. The Striver category is derived from Rama Bijapurkar's model described in his book, "Winning in the Indian Market: Understanding the Transformation of Consumer India." The Aspirer category is derived from the McKinsey's Global Institute's model in the May 2007 report.

This quote is paraphrased from one participants in the Rapid Assessment Process (RAP) focus groups study identified as Male, SEC D/E from Mangasumudram. The quote reflects a common sentiment of the financial obstacles to treating water.

Family description: the description is from Bijapurkar's depiction of this market segmentation. The metro + low awareness combination did spend a larger percentage of expenditures on education compared to other groups.

56% of those in the low awareness group reported being 'very satisfied' with their source, regardless of the source.

38% of this persona group (low awareness) used a private water connection (PWC) - which was the most common for this persona group. 81% of metro dwellers used PWC.

Usage is based on mean for a family of four using a PWC.

Costs reflect those reported by metro inhabitants using a PWC for a yard tap.

These are the key contamination concerns for PWC users.

73% of this persona group (low awareness) uses 10-12 liter bhindas.

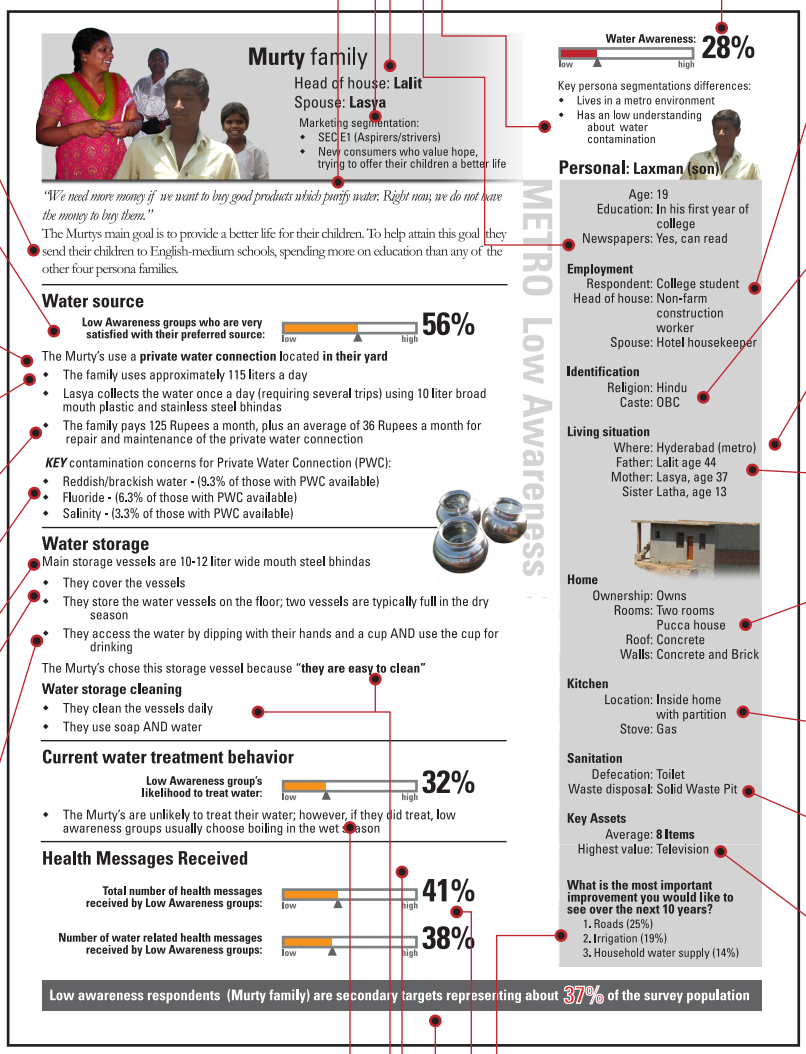
99% of this persona group covered their vessels.
51% of bhinda users stored on the floor. Two vessels was the mean for a family of four.

79% of this persona group access the water by dipping with their hands and a cup; 76% in this persona group also used the cup to drink.

68% of this persona group (low awareness) never treat their water. This is the lowest of all awareness groups.

The number one reason lower awarness groups choose their storage vessels is that they are easier to clean.
89% of this persona group (low awareness) clean their vessels daily; 50% clean soap and water water.

31% of Low awareness group + metro + PWC respondents treated their water in some way; 32% of the low awareness group in general did - the total of 32% is the higher number.



Mean age for this a child acting as the respondent for the survey was actually 30.1, 15% were 20 or under. Laxman was chosen to be the respondent because it was more common for children to be respondents in metro versus other areas. Laxman is a college student because 50% of the 19 year old children answering the survey were in college.

In the average awareness group, 49% have no education, 31% have some or completed primary school, and 12% have some or completed secondary school. 48% of head of households in this persona group can read a newspaper.

75% of low awareness families live in rural environments, 13% live in urban, 2% live in peri-urban, and 10% live in metro environments. (The breakdown of the sample is almost identical - 72% rural, 18% urban, 2% peri-urban and 8% metro).

Water Awareness: this reflects the number of correct identification of the causes and effects of water contamination. As the average awareness group, this persona group scored a mean of 6.5 out of 23 possible correct. (6.5/23 = 28%).

Head of house work: 22% worked on other's farm as wage labor, 13% work as skilled artisan, 16% of metro dwellers worked in construction.
50% of spouses worked in this persona group - housekeeper was the most common metro job.

79% of this persona group are Hindu-65% are classified as OBC caste.

Hyderabad was chosen because it is a metro location.

Average family size was 4.4 in this persona group. 53% of households in this group have at least one child age 13-18.

81% of this group owns their home. Mean size is 2.2 rooms. Materials were chosen as common for pucca houses.

45% of this persona group had kitchens inside with a partition. 49% had a gas stove.

58% of this persona group had private toilets, 45% used solid waste pits.

Televisions and bicycles were the top two valued items. 73% owned a bicycle, 84% owned a television.

NOTE that durable goods were counted by type, for example, if the respondent owned 30 books and one television, this would be counted as 2 durable good items by type.

These are the top three areas for improvement reported by low awareness groups in all locations; percentages indicated number of those who identified the area for improvement.

Of a total of 12 possible health messages, the low awareness groups reported receiving a mean of 4.86 messages (41%), and of five water related health messages they received a mean of 1.88 (38%).

Low awareness respondents (in all locations) comprise 37% of the survey population.

Rudraraju family

Head of house: **Mahesh**(Respondent)
Spouse: **Meghna**

Marketing segmentation:
- SEC R3 (Aspirers/strivers)
- New consumers who value hope, trying to offer their children a better life

Water Awareness: 13%

low — high

Key persona segmentations differences:
- Lives in a rural environment
- Has a minimal understanding about water contamination

"Whenever our son in law visits us, he insists on drinking only hot water. I boil the water as soon as I get a phone call that he is visiting us."

The Rudraraju's only daughter recently married and moved away. The family worked hard to make sure she got an education. Meghna's mother, Manta, lives with them now, after the death of her husband two years ago. Manta firmly believes that water treatment is a waste of time.

RURAL Minimal Awareness

Water source

Minimal Awareness groups who are very satisfied with their preferred source: 71%

low — high

The Ridraraju's use a **private well** located 11 minutes from their house
- The family uses approximately 68 liters a day
- Meghna collects the water once a day (requiring several trips) using 10 liter broad mouth plastic bhindas
- The family does not pay for the use of the private well

KEY contamination concerns for Private Well(PrivW):
- Salinity - (17.5% of those with PrivW available)
- Germs, worms & insects (4.7% of those with PrivW available)
- Chlorine smell - (1.7% of those with PrivW available)

Water storage

Main storage vessels are 10-12 liter wide mouth aluminum bhindas
- They cover the vessels
- They store the water vessels on the floor
- Two storage vessels are typically full in the dry season
- They access the water by dipping with their hands and a cup AND use the cup for drinking

The Rudraraju's chose this storage vessel because it **"is easy to keep clean"**

Water storage cleaning
- They clean the vessels daily
- They use soap AND water

Current water treatment behavior

Minimal Awareness group's likelihood to treat water: 30%

low — high

- The Rudraraju's are unlikely to treat their water; however, if they did treat, minimal awareness groups usually choose to use a filter in the wet season

Health Messages Received

Total number of health messages received by Minimal Awareness groups: 35%

low — high

Number of water related health messages received by Minimal Awareness groups: 31%

low — high

Personal: Mahesh

Age: 55
Education: No formal education
Newspapers: No, cannot read

Employment
Respondent: Works on other's farm as wage labor
Spouse: Does not work

Identification
Religion: Hindu
Caste: OBC

Living situation
Where: Ramaswamypalli
Wife: Meghna, age 44
Mother-in-law: Manta, age 72

Home
Ownership: Owns
Rooms: Two rooms Semi-pucca house
Roof: Grass thatch
Walls: Brick

Kitchen
Location: Outside the house in open air
Stove: Traditional wood burning stove

Sanitation
Defecation: In the open
Waste disposal: Compost or bury

Key Assets
Average: **8 Items**
Highest value: Television

What is the most important improvement you would like to see over the next 10 years?
1. Irrigation (23%)
2. Roads (19%)
3. Sanitation and Hygiene (10%)

Minimal awareness respondents (Rudraraju family) are secondary targets representing about 18% of the survey population

Rudraraju Family Detail

Names: The "**R**udraraju" name corresponds to the family's **r**ural location; however the family represents all locations for those in the minimal awareness classification. The first names start with M to correspond to their "minimal awareness" classification. Meghna is Telugu for cloud, Mahesh is Telugu for Lord Siva.

Marketing segmentation: SEC R3 is a segment previously identified by PATH. The Striver category is derived from Rama Bijapurkar's model described in his book, "Winning in the Indian Market: Understanding the Transformation of Consumer India." The Aspirer category is derived from the McKinsey's Global Institute's model in the May 2007 report.

This quote is paraphrased from one participants in the Rapid Assessment Process (RAP) focus groups study identified as Female, SEC R2 from Nachupally.

Family description: the description emphasizes the RTI study finding that older respondents were less likely to see a need for water treatment.

71% of those in the minimal awareness group reported being 'very satisfied' with their source, regardless of the source. This is the highest of all persona groups.

While only 3% of the minimal awareness group use a private well (PrivW), as one of the top four sources (7% of the survey population) one family needed to represent the source. Actually, 39% of this persona group uses PWC and 35% use a Public Tap.

Distance is the mean distance for a private well.
Usage is based on mean for a family of three using a PrivW.
No costs were associated with the use of a private well.
These are the key contamination concerns for PrivW users.

68% of this persona group (minmal awareness) uses 10-12 liter bhindas for storage.

97% of this persona group covered their vessels.
51% of bhinda users stored on the floor. Two vessels was the mean for a family of three.

81% of this persona group access the water by dipping with their hands and a cup; 77% in this persona group also used the cup to drink.

62% of this persona group (minimal awareness) never treat their water.

The number one reason lower awareness groups choose their storage vessels is that they are easier to clean.
83% of this persona group (minimal awareness) clean their vessels daily; 60% clean soap and water water (the highest use of soap AND water).

38% of Minimal awareness group + rural + PrivW respondents treated their water in some way; 39% of the minimal awareness group in general did - the total of 30% is skewed lower to correspond to the trend that higher awareness is significantly positively associated with more treatment.

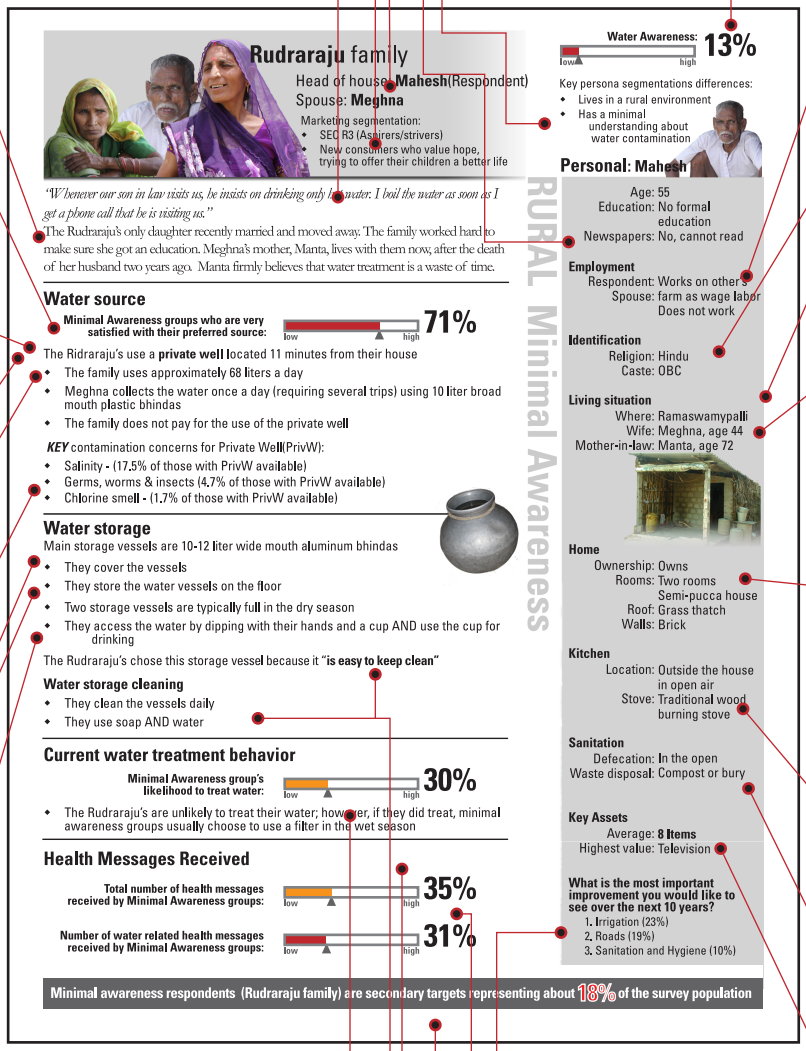
Mean age head of house for this persona group (minimal awareness) is 47.0 - skewed higher here to emphasize that this is the oldest group.

In the minimal awareness group, 53% have no education (the most of any group), 33% have some or completed primary school, and 9% have some or completed secondary school.

47% of head of households in this persona group can read a newspaper - the lowest of any persona groups.

76% of low awareness families live in rural environments, 17% live in urban, 1% live in peri-urban, and 7% live in metro environments. (The breakdown of the sample is almost identical - 72% rural, 18% urban, 2% peri-urban and 8% metro).

Water Awareness: this reflects the number of correct identification of the causes and effects of water contamination. As the average awareness group, this persona group scored a mean of 2.9 out of 23 possible correct. (2.9/23 = 13%).



Head of house work: 23% worked on other's farm as wage labor, 19% work as skilled artisan.50% of spouses did not work in this persona group.

88% of this persona group are Hindu-70% are classified as OBC caste (the highest of any group).
Ramaswamypalli was chosen because the RTI report had SEC R3 respondents from this location.

Average family size was 4.4 in this persona group - but this group had the highest percentage of three person households (22%) compared to other persona groups.

87% of this group owns their home. Mean size is 2.4 rooms. Materials were chosen as common for a semi-pucca houses. The persona group was much more likely to own a pucca house; however 10% of the survey population owned semi-pucca houses so one family was chosen to represent.

34% of this persona group had kitchens outside (highest of any group) - 88% of homes with outdoor kitchens had traditional stoves.

42% of this persona group had no facilities (highest of any group) - 28% composted. This group had the lowest rate of using a solid waste pit.

Televisions and bicycles were the top two valued items. 76% owned a bicycle, 82% owned a television.
See NOTE on other detail sheets of durable good calculation.

These are the top three areas for improvement reported by minmal awareness groups in all locations; percentages indicated number of those who identified the area for improvement.

Of a total of 12 possible health messages, the minmal awareness groups reported receiving a mean of 4.24 messages (35%), and of five water related health messages they received a mean of 1.53 (38%).

Mimal awareness respondents (in all locations) comprise 18% of the survey population.

Water Contamination in most popular sources

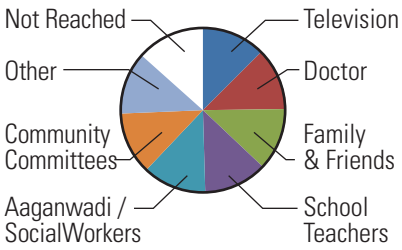
A. Has this [WATER SOURCE] been contaminated in any way now or in the past 6 months?

B. If YES, how did this contamination affect your use? (Response is significantly associated with contamination type)

- Never used this source: (only heard about contamination)
- Stopped using
- No change in use
- Used modified
  - Do not used for drinking
  - Treat for drinking
  - Treat for all uses

	Private Water Connection	**Public Tap**	**Private Well**	**Public Well**
	Available to : N= 778 *Reporting contamination:* *N = 207 (27%)* ***KEY*** contamination concerns: ◆ Reddish/brackish H_20 (9.3%) ◆ Fluoride - (6.3%) ◆ Salinity - (3.3%)	*Available to : N= 876* *Reporting contamination:* *N = 245 (28%)* ***KEY*** contamination concerns: ◆ Reddish/brackish H_20 (10.4%) ◆ Salinity - (5.8%) ◆ Fluoride - (4.5%)	*Available to : N= 406* *Reporting contamination:* *N = 120 (30%)* ***KEY*** contamination concerns: ◆ Salinity - (17.5%) ◆ Germs, worms % insects (4.7%) ◆ Chlorine smell - (1.7%) ◆ Fluoride - (1.7%)	*Available to : N= 637* *Reporting contamination:* *N = 310 (49%)* ***KEY*** contamination concerns: ◆ Salinity - (36.9%) ◆ Fluoride - (2.5%) ◆ Reddish/brackish H_20 (2.4%)
Arsenic	A = 0.7% (N= 4) B = 33% 17% 50%	A = 0.7% (N= 6) B = 33% 67%	A = 1.0% (N= 4) B = 50% 17% 25%	A = 0.6% (N= 4) B = 50% 50%
Flouride	A = 6.3% (N= 49) B = 2% 73% 24%	A = 4.5% (N= 39) B = 3% 5% 67% 26%	A = 1.7% (N= 7) B = 86% 14%	A = 2.5% (N= 16) B = 13% 50% 38%
Salinity	A = 3.3% (N= 26) B = 4% 58% 38%	A = 5.8% (N= 51) B = 6% 59% 35%	A = 17.5% (N= 71) B = 1% 3% 62% 34%	A = 36.9% (N= 235) B = 3% 13% 63% 20%
Chlorine smell	A = 1.4% (N= 11) B = 64% 36%	A = 1.0% (N= 9) B = 67% 33%	A = 1.7% (N= 7) B = 29% 43% 29%	A = 1.7% (N= 11) B = 27% 9% 64%
Reddish / brackish H_20	A = 9.3% (N= 72) B = 1% 8% 71% 19%	A = 10.4% (N= 91) B = 2% 16% 64% 18%	A = 1.2% (N= 5) B = 60% 40%	A = 2.4% (N= 15) B = 13% 7% 53% 27%
Mineral taste	A = 0.5% (N= 4) B = 50% 50%	A = 0.1% (N= 1) B = 100%	A = 0.0% (N= 0) B =	A = 0.2% (N= 1) B = 100%
Germs, worms & insects	A = 2.4% (N= 19) B = 16% 84%	A = 2.6% (N= 23) B = 43% 57%	A = 4.7% (N= 19) B = 42% 26% 11% 21%	A = 1.7% (N= 11) B = 27% 36% 36%
Invisible microbes	A = 0.8% (N= 6) B = 67% 33%	A = 0.8% (N= 7) B = 57% 43%	A = 0.7% (N= 3) B = 33% 67%	A = 1.1% (N= 7) B = 14% 14% 14% 33%
Industrial effluents	A = 0.1% (N= 1) B = 100%	A = 0.1% (N= 1) B = 100%	A = 0.0% (N= 0) B =	A = 0.0% (N= 0) B =
Sewage / drainage	A = 1.5% (N= 12) B = 17% 58% 25%	A = 1.8% (N= 16) B = 6% 19% 63% 13%	A = 0.7% (N= 3) B = 33% 67%	A = 0.9% (N= 6) B = 33% 67%

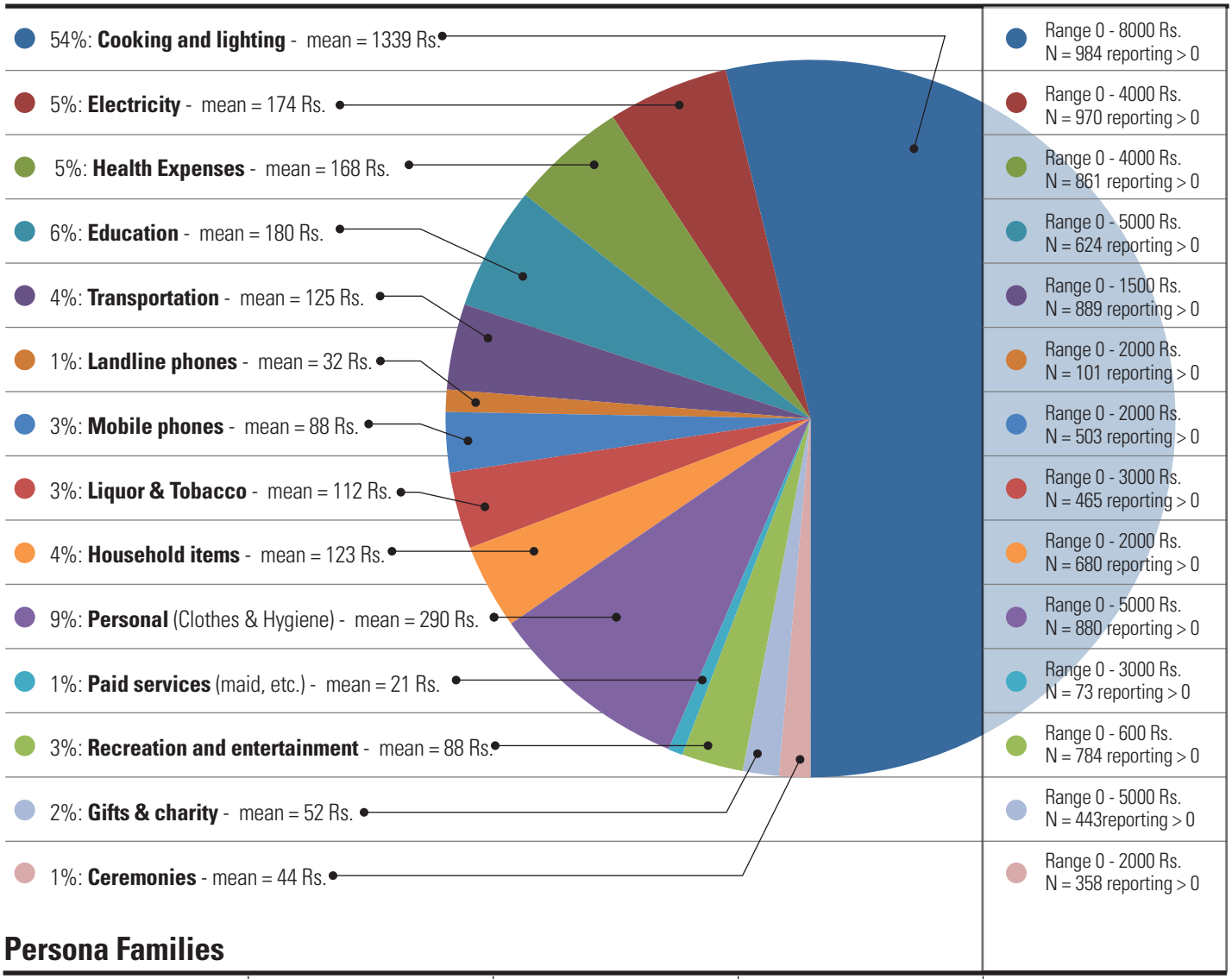
Health messages



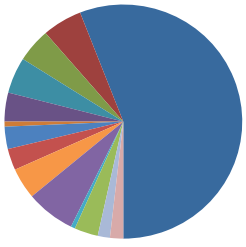
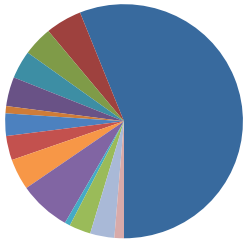
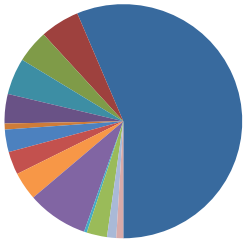
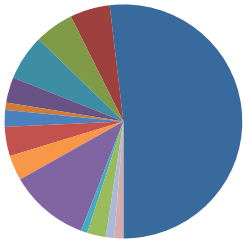
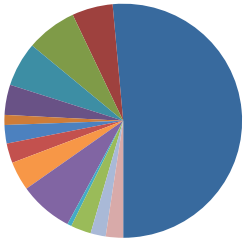
Water Related	Top health message sources							% Persona families reached				
	Television	Doctor	Family & Friends	School Teachers	Aaganwadi / SocialWorkers	Community Committees	Total All Sources	Uppa Family (High Awareness + Urban)	Raju Family (High Awareness + Rural)	Rangan Family (Average Awareness)	Murty Family (Low Awareness)	Rudraraju Family (Minimal Awareness)
Water treatment at home	16%	14%	10%	3%	5%	5%	60%	58%	69%	62%	61%	53%
Safe water storage	12%	11%	13%	3%	5%	3%	58%	67%	63%	60%	56%	55%
Source water treatment	10%	7%	7%	2%	2%	1%	36%	41%	44%	38%	35%	27%
Fluoride/arsenic contamination	3%	4%	1%	1%	1%	2%	11%	5%	15%	10%	13%	9%
Invisible microorganisms	7%	6%	1%	1%	1%	1%	19%	15%	23%	19%	23%	8%
Other Health messages												
Hand Washing	25%	9%	41%	3%	4%	5%	96%	99%	94%	96%	97%	93%
Safe food handling	16%	9%	24%	3%	1%	1%	63%	53%	67%	65%	66%	54%
Dental hygiene	27%	17%	7%	2%	2%	1%	60%	58%	71%	62%	57%	58%
Household waste disposal	5%	3%	8%	1%	1%	2%	24%	26%	35%	26%	24%	14%
Sanitation	16%	7%	13%	1%	2%	6%	59%	65%	63%	50%	55%	59%
Indoor air quality	3%	3%	5%	1%	1%	1%	16%	24%	20%	18%	14%	10%
Keeping children healthy	4%	21%	1%	1%	11%	1%	42%	29%	42%	41%	46%	36%

Monthly Expenditures

Average for survey population - N = 1000 - Mean total = 3237 Rs. (Approximately $70 US)



Persona Families

Uppa Family N = 66 - Mean = 3152 Rs.	Raju Family N = 113 - Mean = 3288 Rs.	Rangan Family N = 268 - Mean = 3267 Rs.	Murty Family N = 373 - Mean = 3411 Rs.	Rudraraju Family N = 180 - Mean = 2829 Rs.
				
Top Five Expenditures	Top Five Expenditures	Top Five Expenditures	Top Five Expenditures	Top Five Expenditures
Cooking & lighting - 56%	Cooking & lighting - 56%	Cooking & lighting - 56%	Cooking & lighting - 52%	Cooking & lighting - 51%
Personal - 7%	Personal - 7%	Personal - 8%	Personal - 11%	Personal - 7%
Electricity - 5%	Electricity - 5%	Electricity - 5%	Education - 6%	Health Expenses - 7%
Health Expenses - 5%	Household items - 4%	Education - 5%	Electricity - 5%	Education - 6%
Education - 5%	Health Expenses - 4%	Health Expenses - 5%	Health Expenses - 5%	Electricity - 6%

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