

Prayas Energy Group

Understanding the Impacts of India's LED Bulb Programme, "UJALA"

Results of Consumer and Retailer Surveys

Consumer Survey Results

Overview

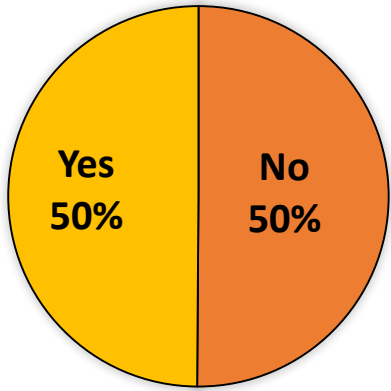
| | No. of Households Surveyed | No. of Bulbs Bought by Respondents | Average no. of bulbs bought per household |
|---------------------------|----------------------------|------------------------------------|---|
| Pune | 451 | 1798 | 4 |
| Lucknow | 200 | 1295 | 6 |
| Puducherry | 378 | 1134 | 3 |
| Total/ Average | 1029 | 4227 | 4 |

Sampling Methodology

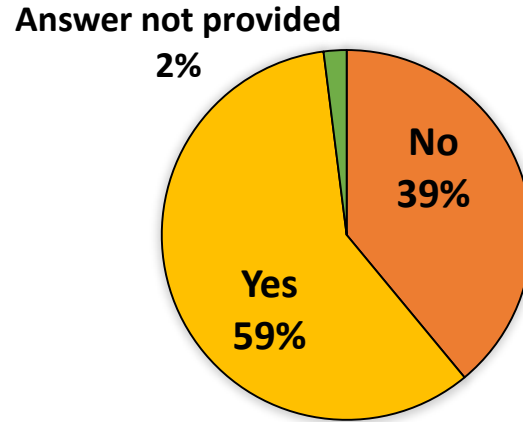
| Location | Type of survey | Sample selected from | Survey methodology |
|-------------------|-----------------------|---|--|
| Pune | In-person | Wards/localities in the urban and rural areas of Pune district. | <p>Urban sample (402 households): Random selection of administrative wards. Snowballing used to obtain the sample. Households from the low, medium and high income groups surveyed.</p> <p>Rural Sample (49 households): Identification of the area that recorded the highest number of UJALA bulb sales in rural Pune. Snowballing used to obtain the sample.</p> |
| Puducherry | In-person | List of UJALA customers provided by EESL. | Selection of ten areas in Puducherry district that recorded the maximum number of bulb sales. Random selection of proportionate number of households from each area, from data set. |
| Lucknow | In-person, telephonic | List of 695 UJALA customers who had bought bulbs through on-bill financing provided by Madhyanchal Vidyut Vitaran Nigam (MVVNL) | Sample divided equally for in-person survey and telephonic survey. Separate questionnaires prepared for the two surveys. Random selection of households from data set for both surveys. |

Were you familiar with LED bulbs before this programme was launched?

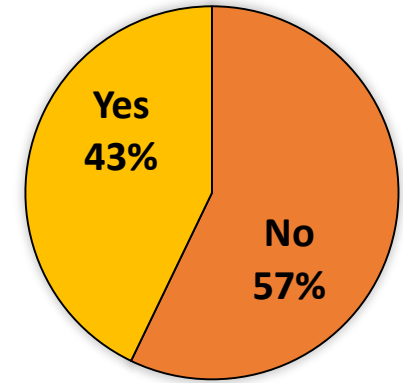
PUNE



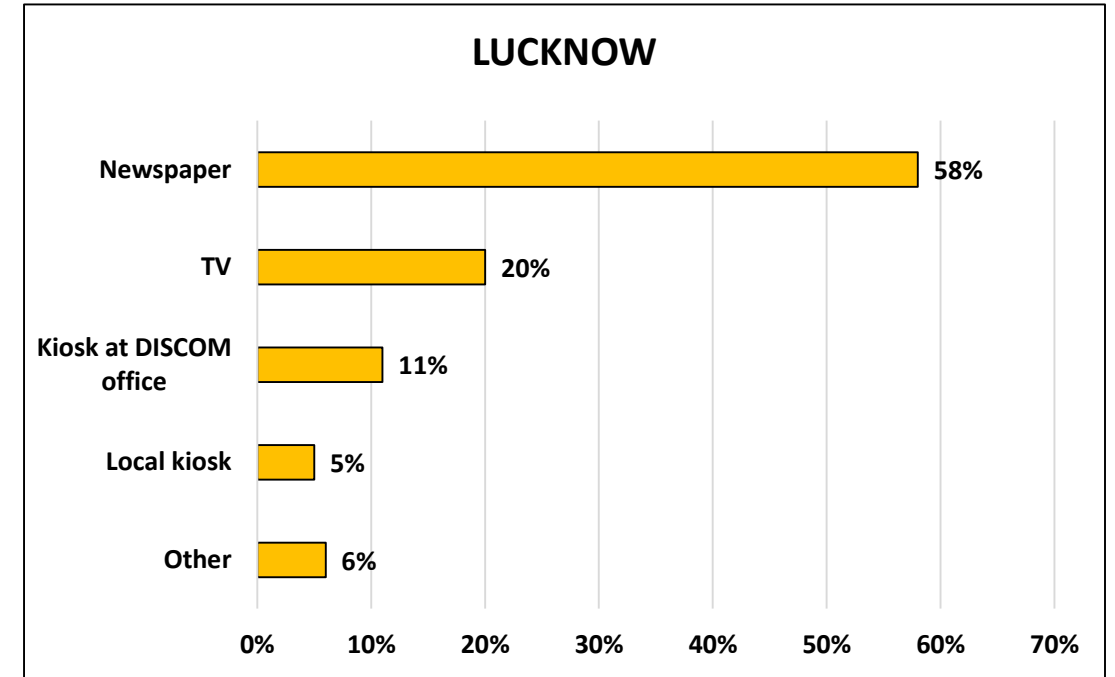
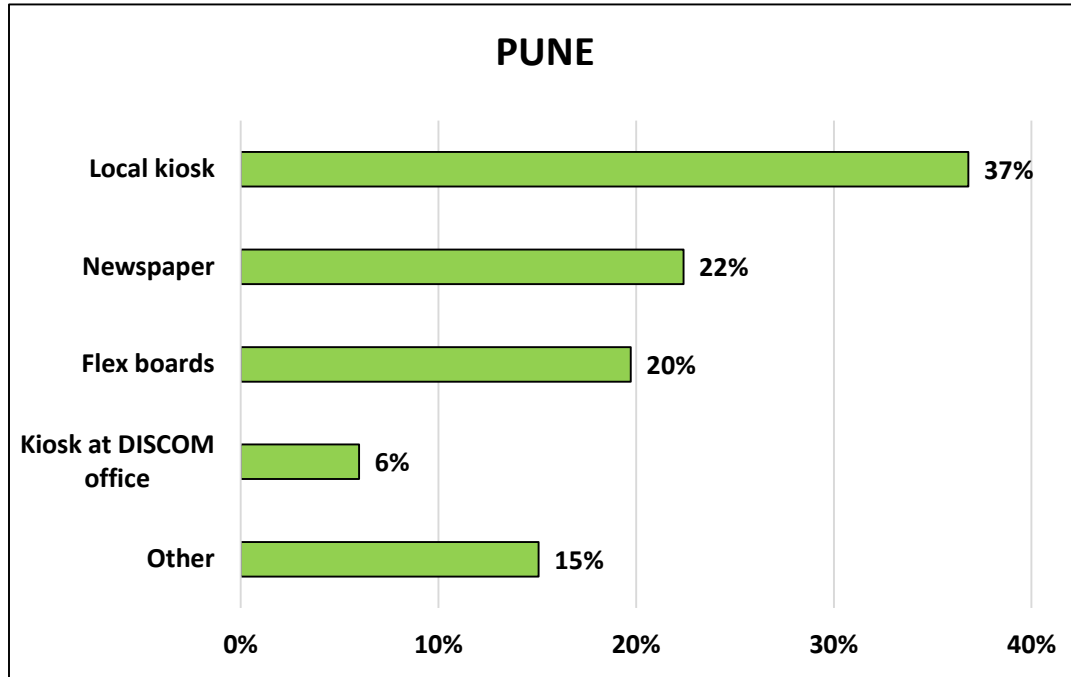
LUCKNOW



PUDUCHERRY



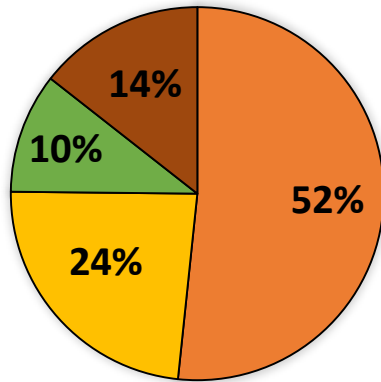
How did you get to know about UJALA?



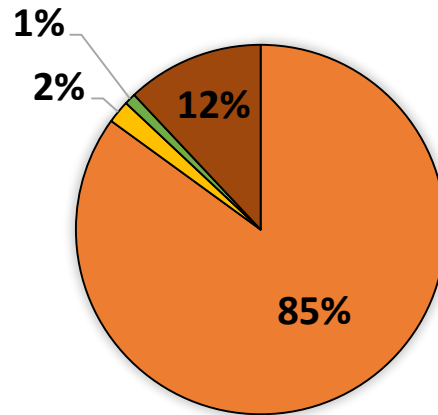
This question was not asked for the Puducherry survey as the pilot programme covered all the households.

Why did you buy bulbs under UJALA?

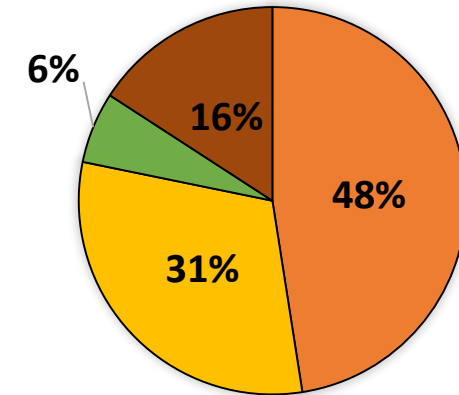
PUNE



LUCKNOW



PUDUCHERRY

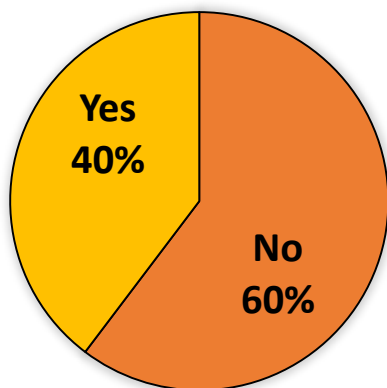


Reduction in electricity bill
Good for the environment

Cheaper than the bulbs available in the market
Other

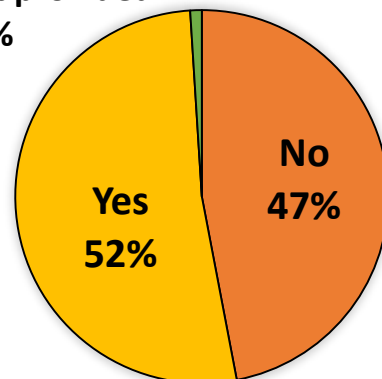
Would you have bought LED bulbs if the programme were not launched?

PUNE

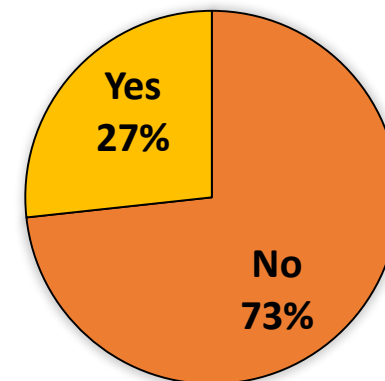


LUCKNOW

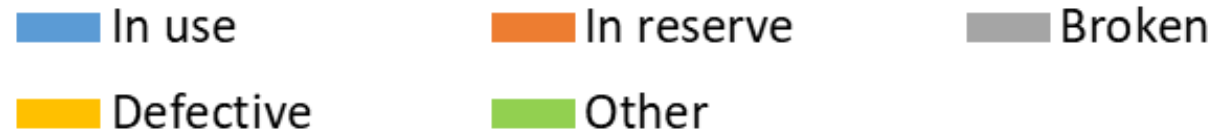
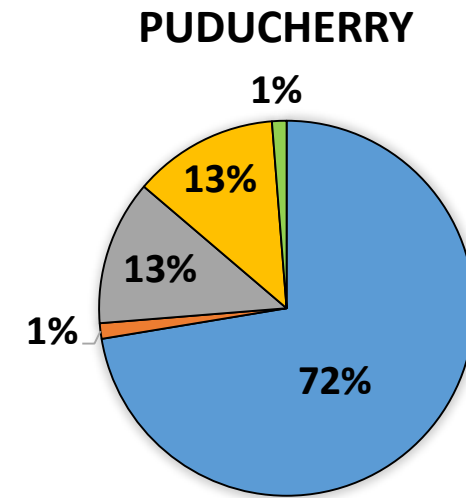
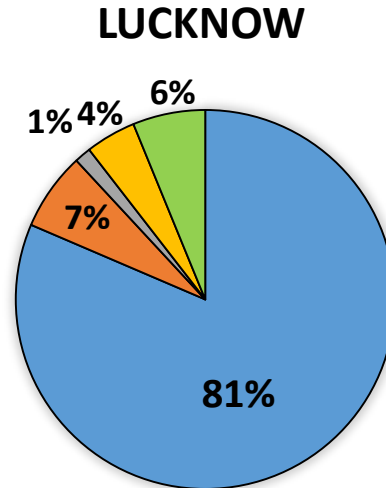
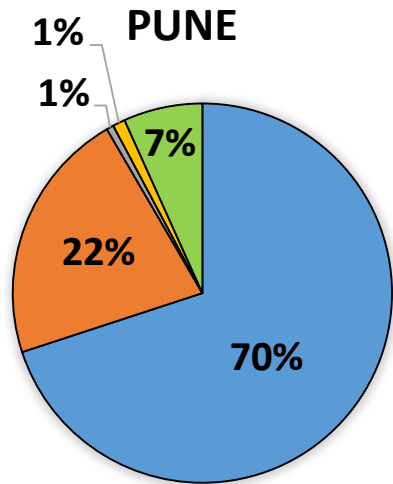
Answer not provided
1%



PUDUCHERRY

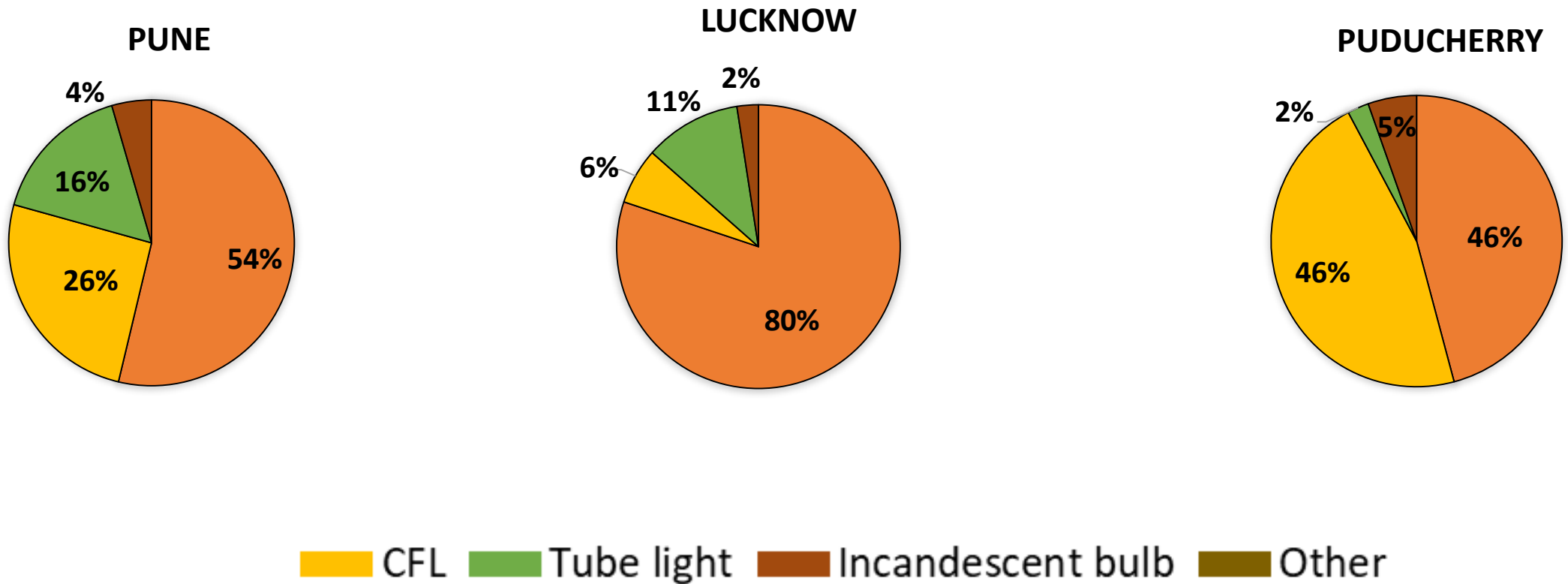


Current status of LED bulbs bought under UJALA



'Other' includes : Not using due to bad quality, gave to others/disposed

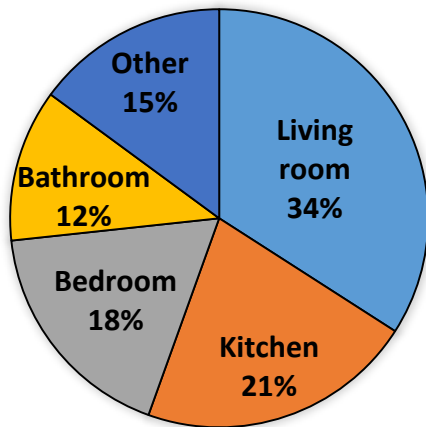
Which type of lamp did the UJALA bulb replace?



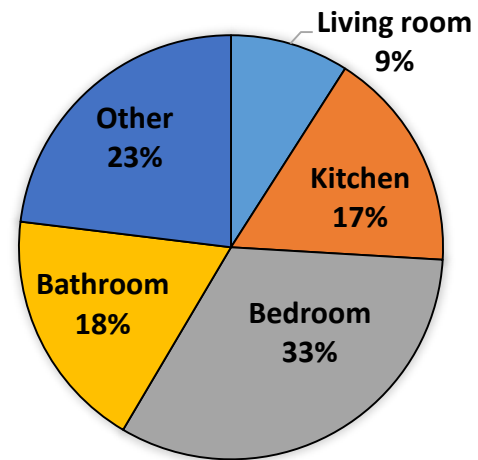
'Other' includes: New socket, LED bulb, LED tube light

In which rooms did you install the bulbs?

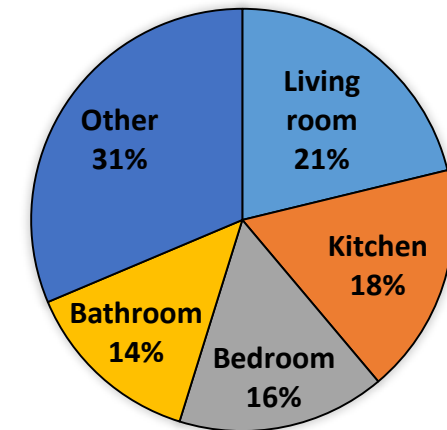
PUNE



LUCKNOW



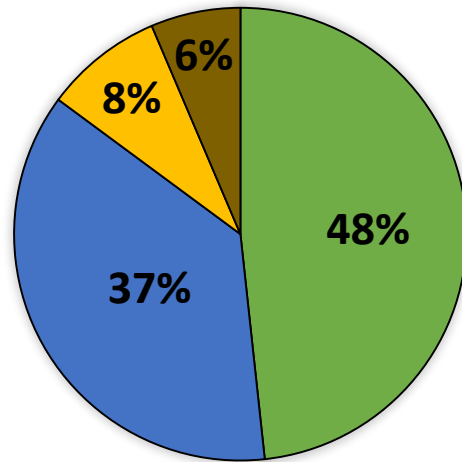
PUDUCHERRY



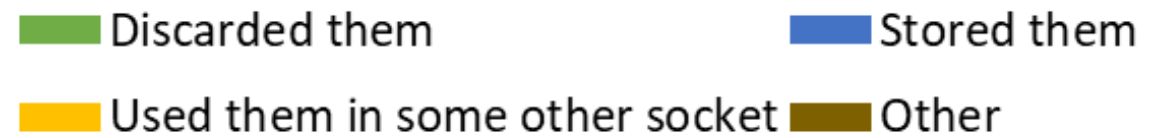
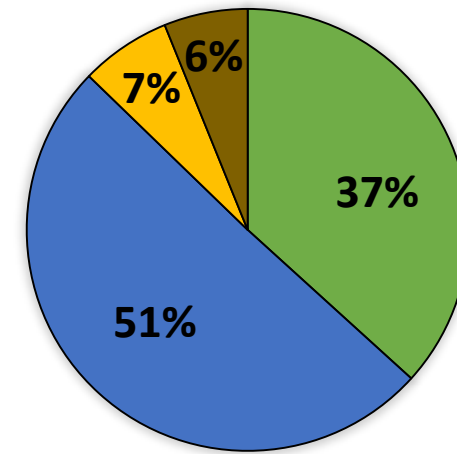
'Other' includes: Balcony, porch, toilet, dining room, store room, worship room, gate, stairs, garage, garden

What did you do with your old lamps?

PUNE

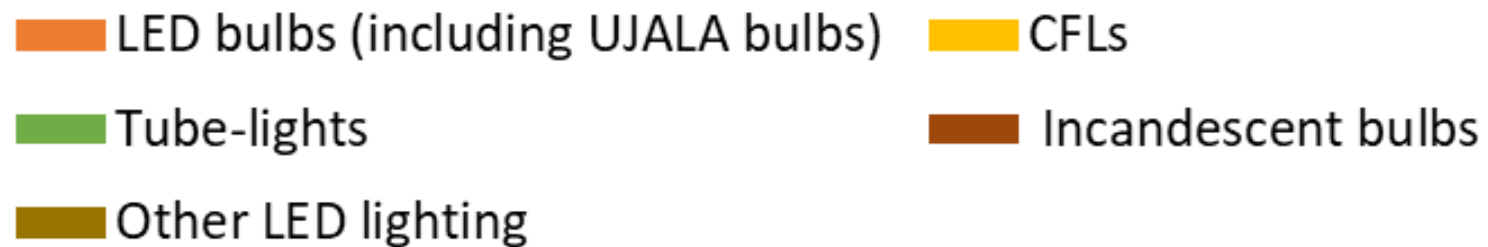
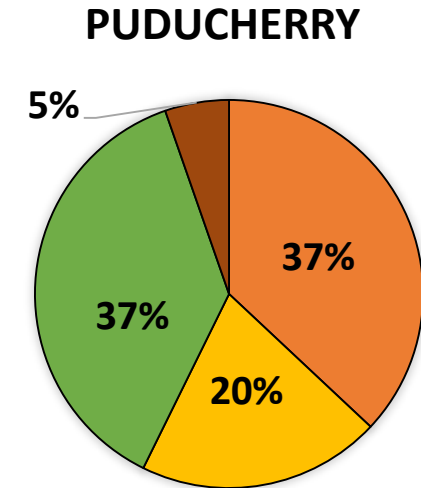
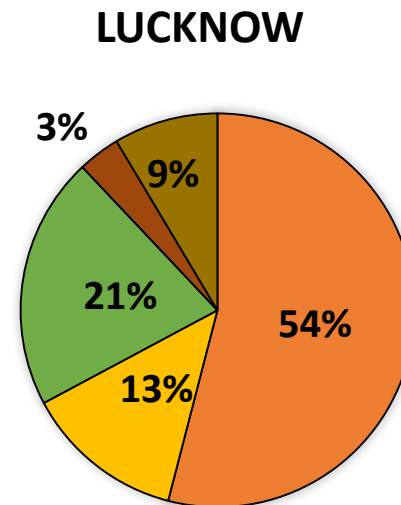
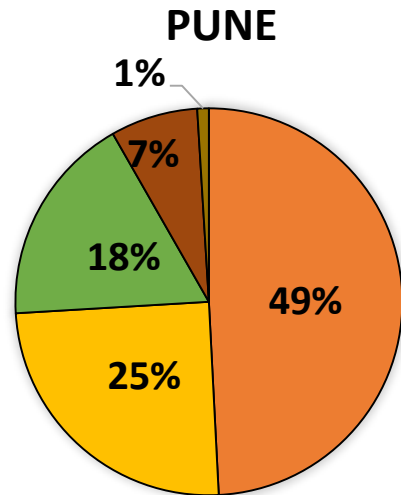


LUCKNOW



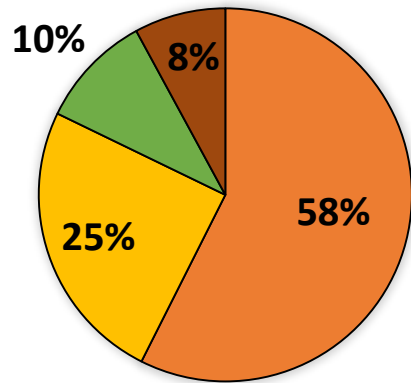
This question was not asked for the Puducherry survey as provision for the disposal of bulbs was made by the implementing agency.

Types of lamps in use

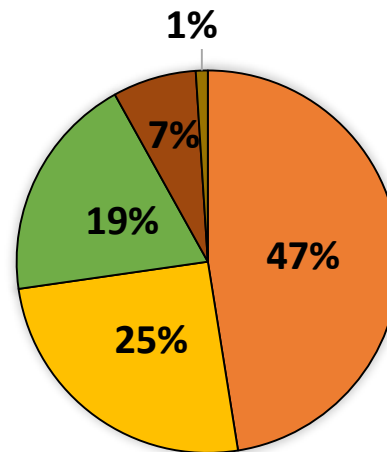


Types of lamps in use, by income group - Pune

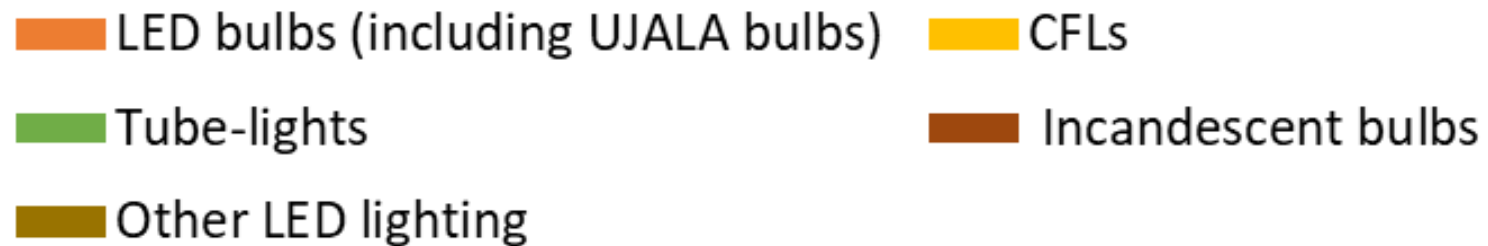
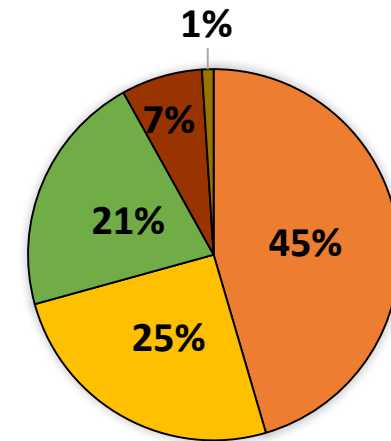
LOW INCOME HOUSEHOLDS



MEDIUM INCOME HOUSEHOLDS



HIGH INCOME HOUSEHOLDS



Use and savings for UJALA bulbs in surveyed households

| | Pune | Lucknow | Puducherry |
|---|------|---------|------------|
| Average daily usage hours (hrs/bulb) | 4 | 6 | 5 |
| Estimated annual savings per LED bulb (kWh) | 34 | 31 | 47 |
| Estimated load reduction per LED bulb (W) | 20 | 16 | 29 |

Income wise use and savings for UJALA bulbs in surveyed households - Pune

| Income group | Incandescent bulbs replaced(%) | Average Usage (hrs) | Annual Savings (kWh/LED bulb) |
|--------------|--------------------------------|---------------------|-------------------------------|
| Low | 45% | 5.5 | 56 |
| Medium | 18% | 3.6 | 27 |
| High | 18% | 3.2 | 22 |

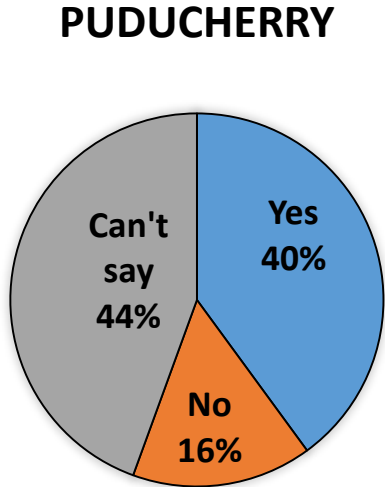
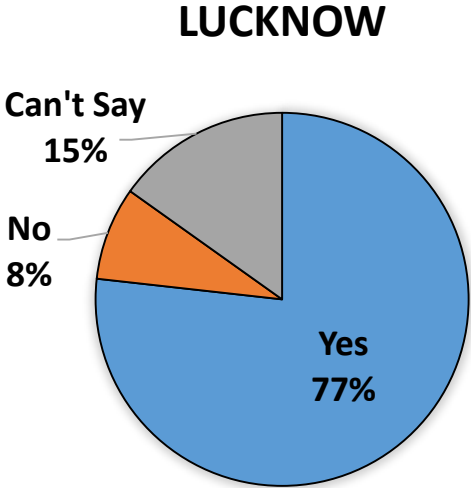
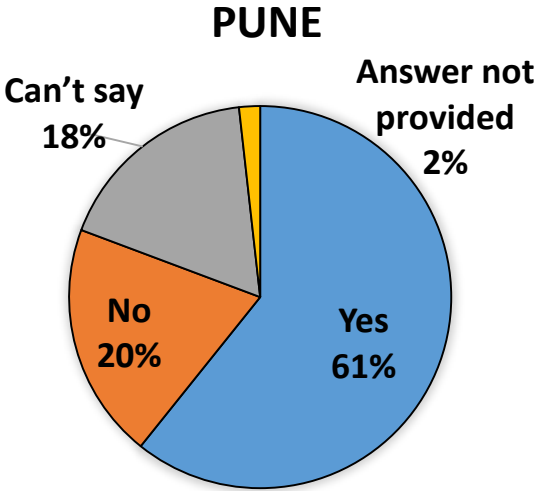
Annual energy savings per bulb (kWh)

$$= \frac{\text{Sum of } [\{\text{Wattage of replaced lamp (W)} - \text{Wattage of LED bulb (W)}\} \times \text{Daily usage of LED bulb (hrs)} \times 320 \text{ (days)}]}{\text{Number of LED bulbs in use}}$$

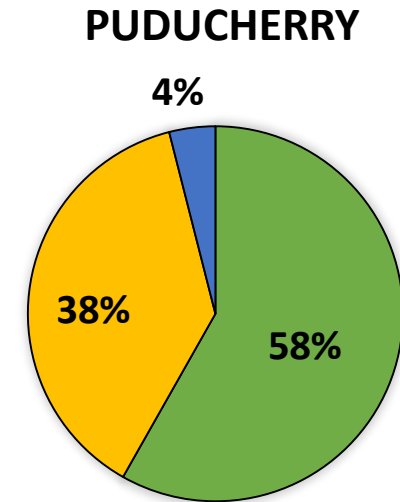
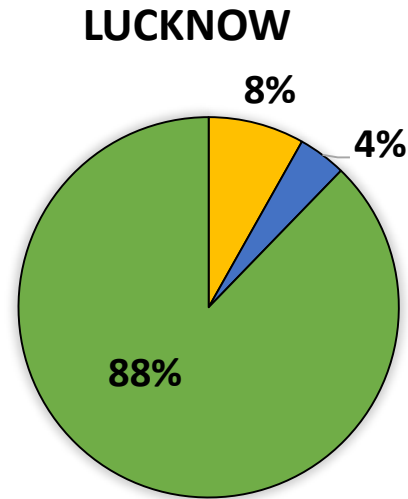
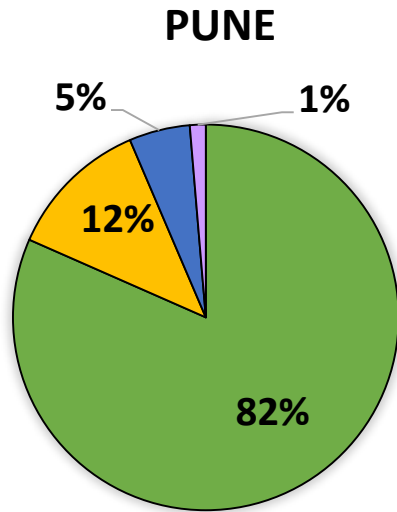
Reduced peak demand (W) (for LED bulbs in use during the peak period [6 p.m. to 10 p.m.]

$$= \frac{\text{Sum of } \{\text{Wattage of replaced lamp (W)} - \text{Wattage of LED bulb (W)}\}}{\text{Number of LED bulbs in use}}$$

Do you think that your electricity bill has reduced with the use of the bulbs?



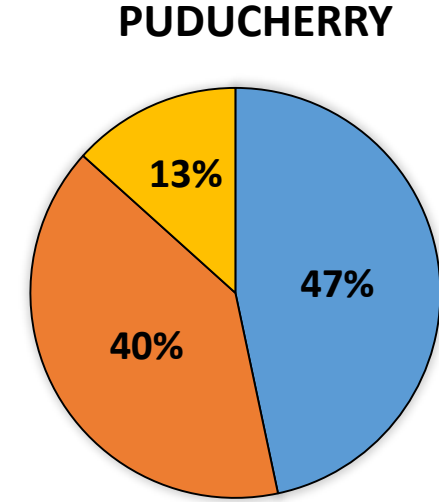
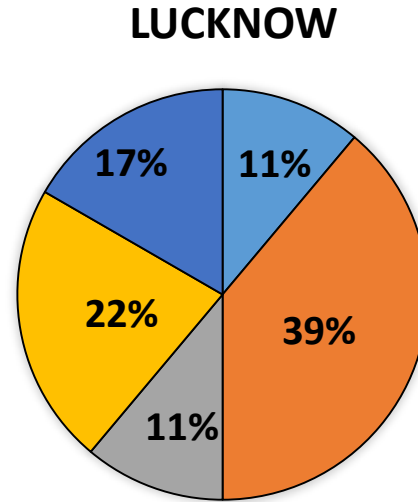
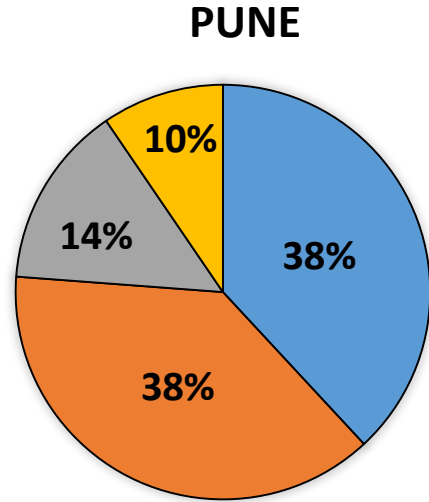
Are you satisfied with the quality and performance of the bulbs?




Yes Neutral No Answer not provided


*In Lucknow, this question was only asked for the in-person survey


Why are you not satisfied with the bulbs?





- Question asked to respondents who had replied 'No' when asked whether they were satisfied with the quality and performance of the bulbs.
- 'Other' includes: Bulb breaks easily, bulb did not last long enough, problem with exchanging bulbs under warranty, fusing of bulb.

 The light is too bright

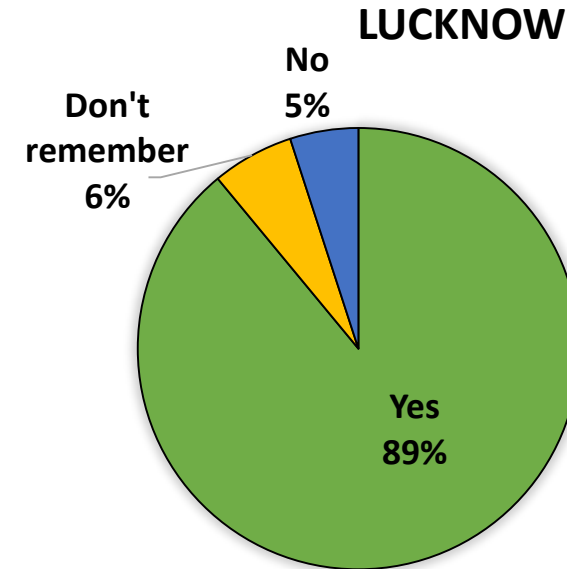
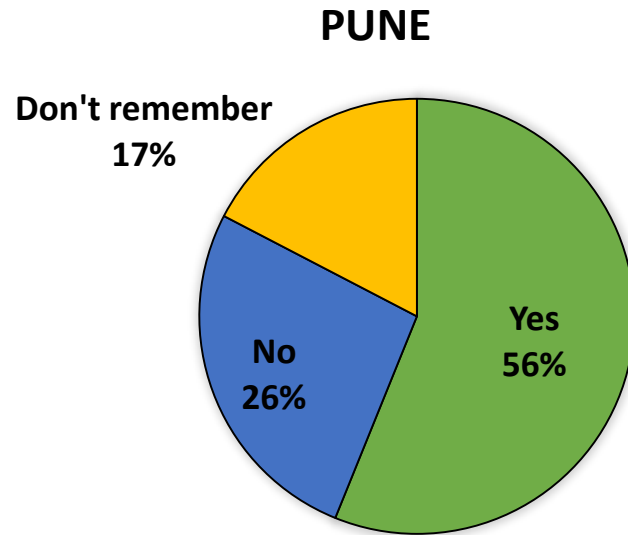
 Aesthetic reasons

 Other

 The light is not bright enough

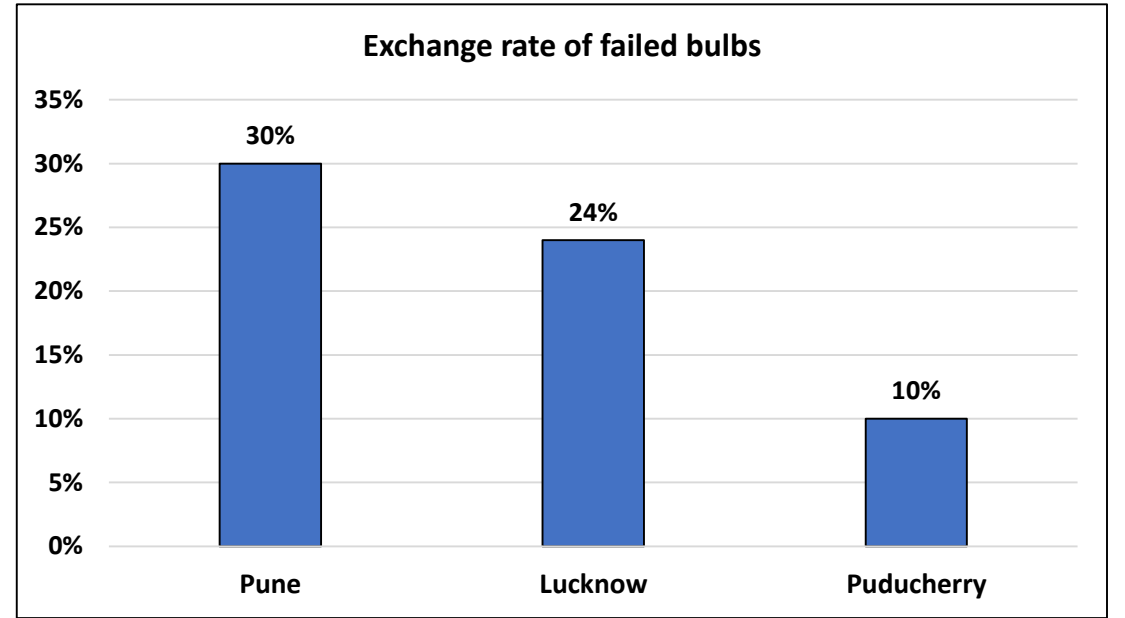
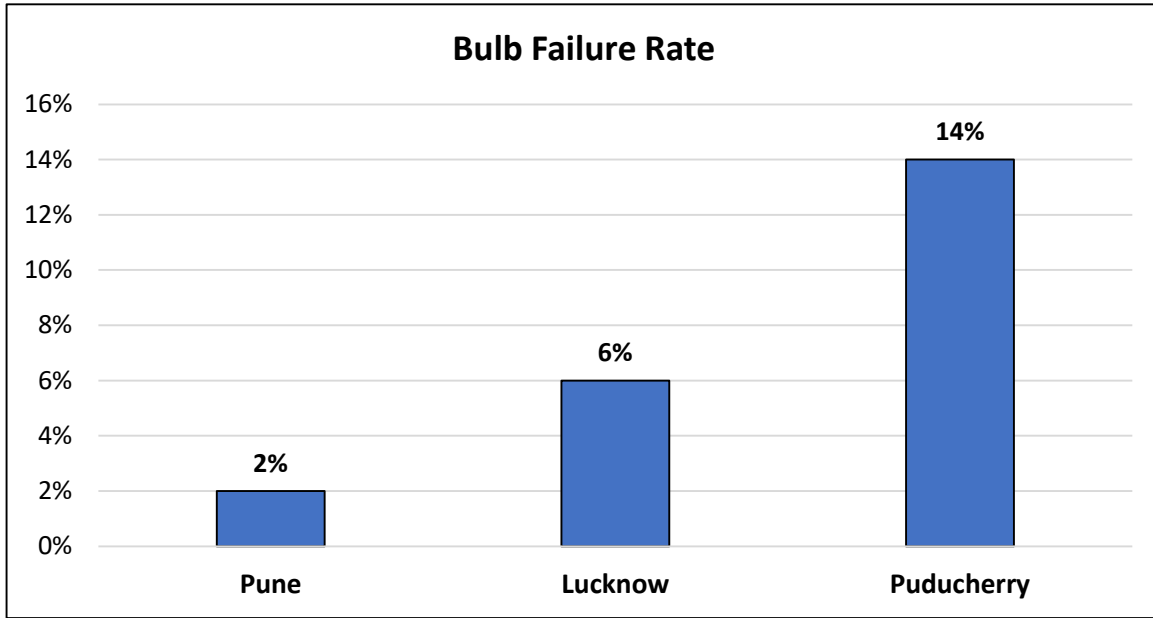
 Poor bulb quality

Were you told about the warranty on the bulbs?



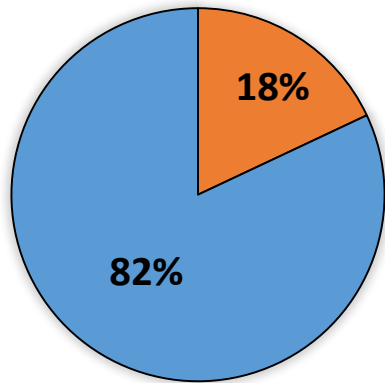
*In Lucknow, this question was only asked for the in-person survey

Questions related to certain processes were not asked for the Puducherry survey. This is because the clarity with which the respondents would be able to recall details was uncertain, as the programme had been implemented three years ago.

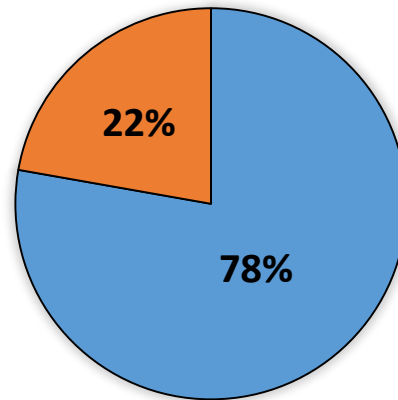


Why didn't you get the defective bulbs exchanged?

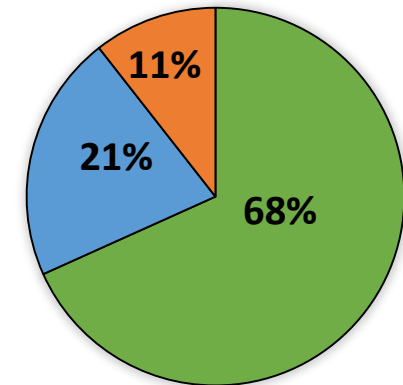
PUNE



LUCKNOW

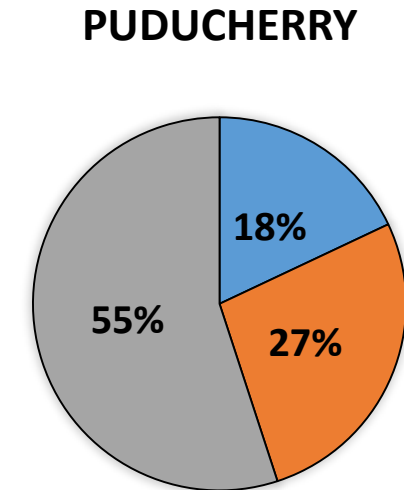
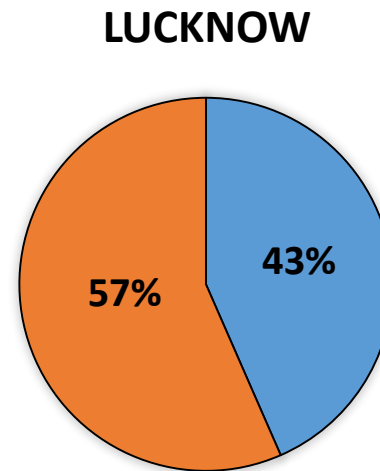
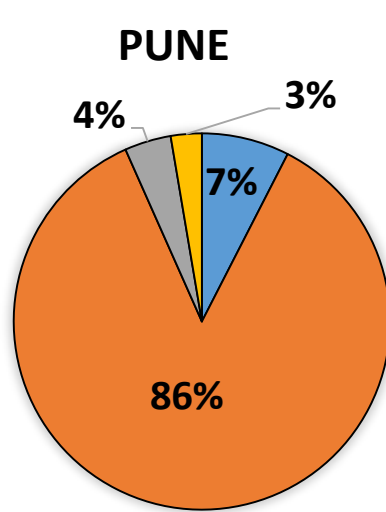


PUDUCHERRY



- Did not know about the warranty
- It was not that important to me
- Tried to, but was unsuccessful

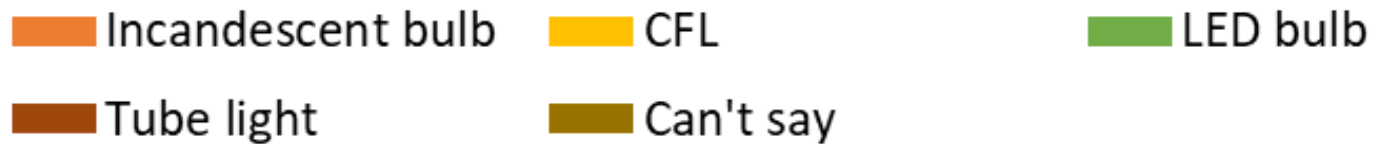
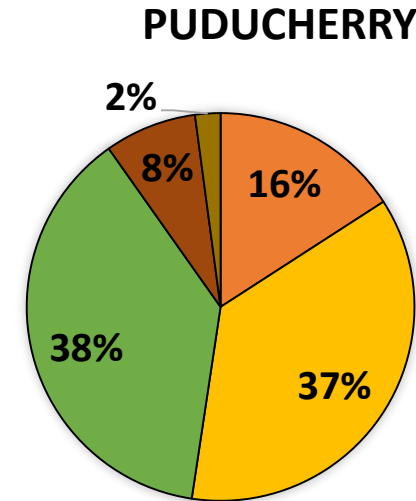
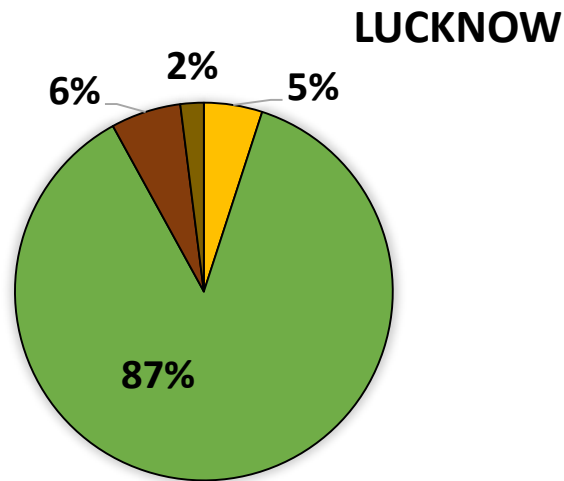
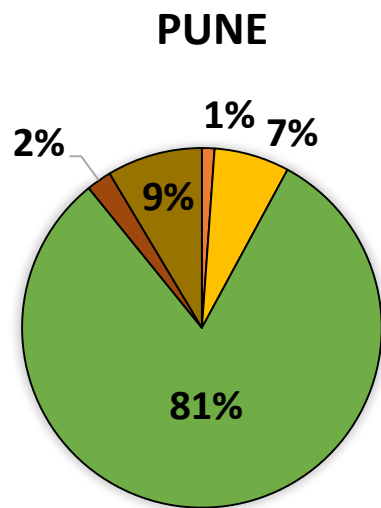
Do you keep the bulbs on for longer than usual because they are LEDs?



■ Yes ■ No ■ Maybe ■ Response not provided

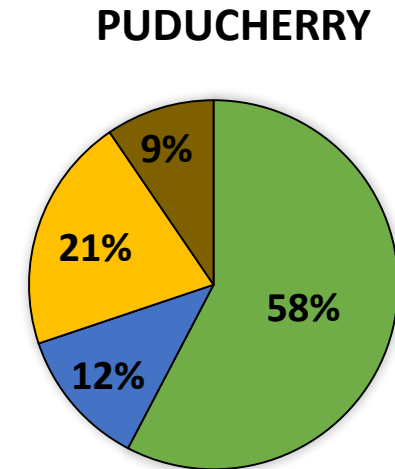
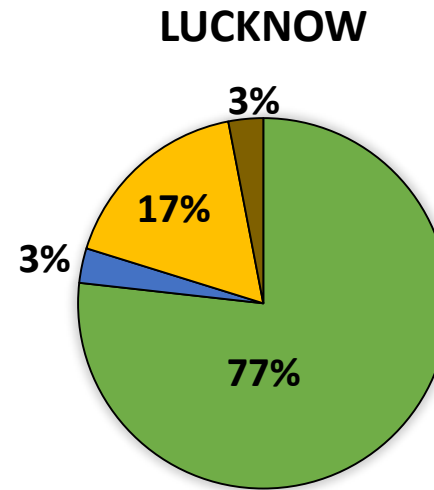
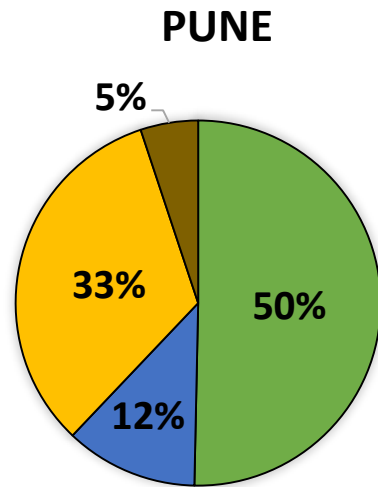
*In Lucknow, this question was only asked for the in-person survey

After having used the UJALA bulb to the end of its useful life, what will you replace it with?



*In Lucknow, this question was only asked for the in-person survey

Action taken after buying UJALA bulbs



Recommended LED bulbs to others

None of the above

Bought LED bulbs and LED tube-lights from the market

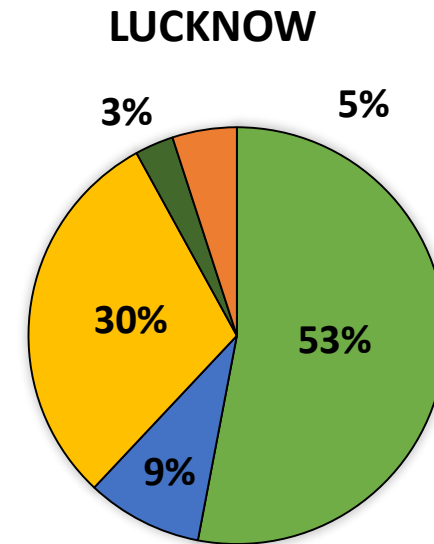
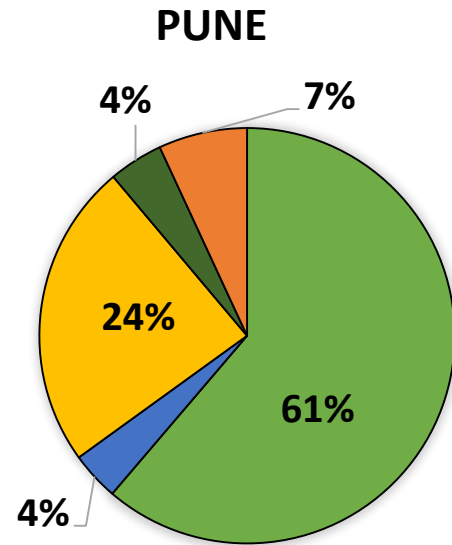
Other

*In Lucknow, this question was only asked for the in-person survey

Other includes: "Replaced an old appliance with an energy efficient appliance", as well as consumers who have taken more than one action for e.g. "Recommended LED bulbs to others and bought LED bulbs and LED tube-lights from the market".

OTHER PROCESSES

Documents submitted for purchase of bulbs



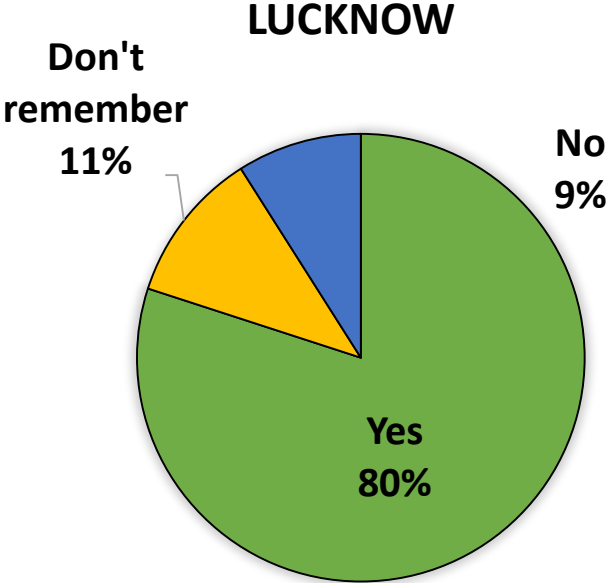
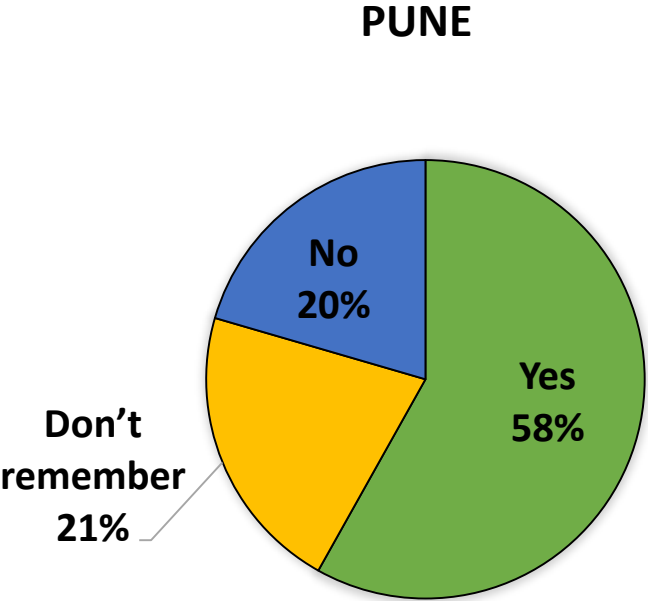
Electricity Bill
No documents

Identity proof
Don't remember

Both

*In Lucknow, this question was only asked for the in-person survey

Did you receive a bill for your purchase?



*In Lucknow, this question was only asked for the in-person survey

Retailer Survey Results

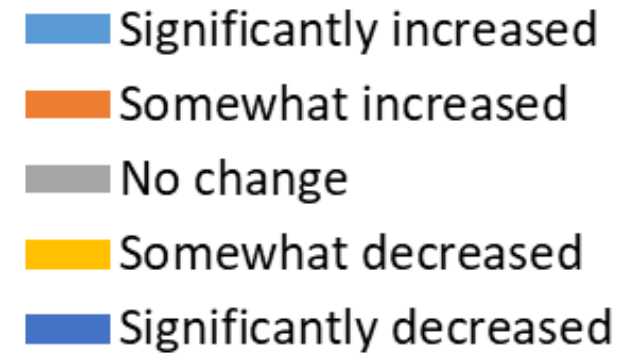
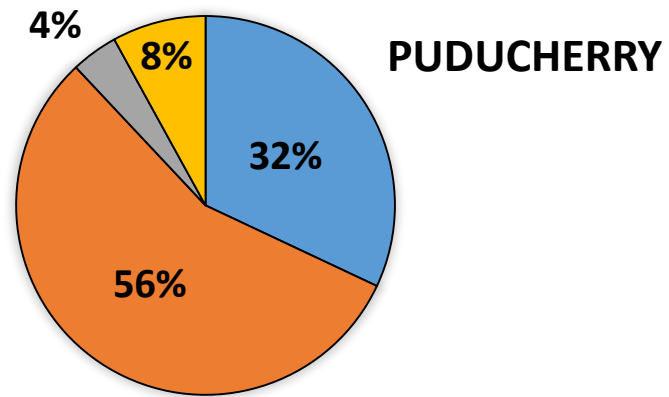
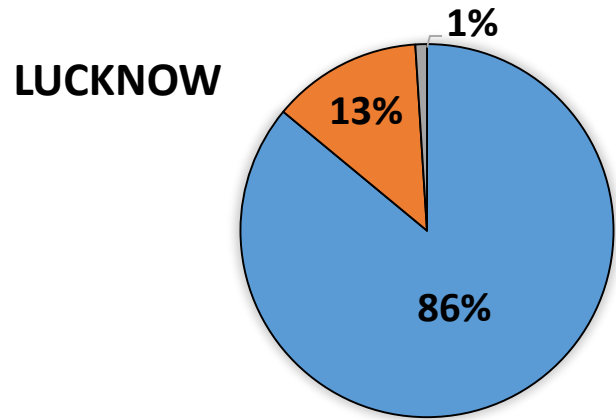
Overview

| Location | No. of shops |
|--------------|--------------|
| Lucknow | 100 |
| Puducherry | 50 |
| Total | 150 |

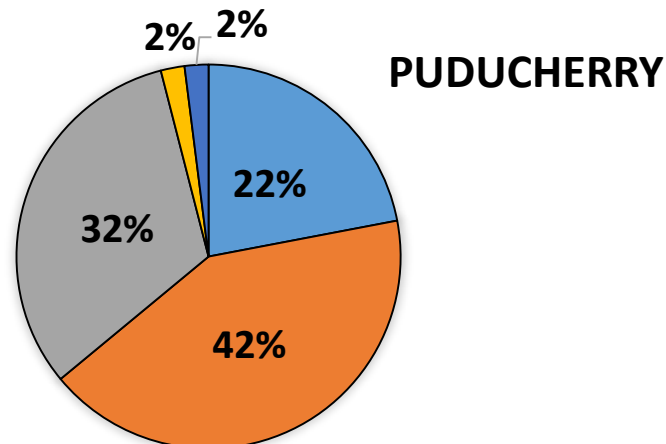
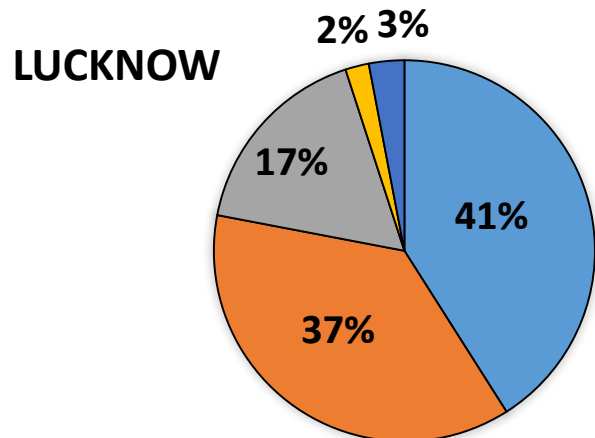
Methodology

The central areas of each city were identified and electrical goods shops were chosen in those areas.

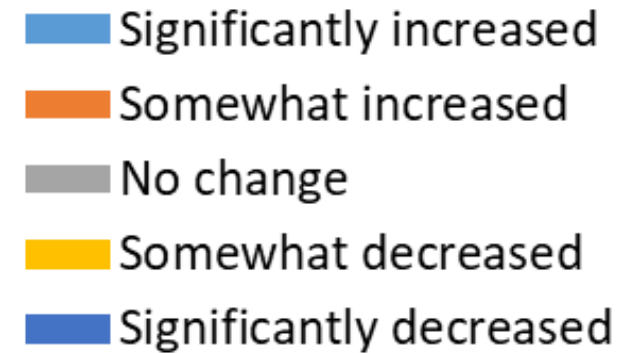
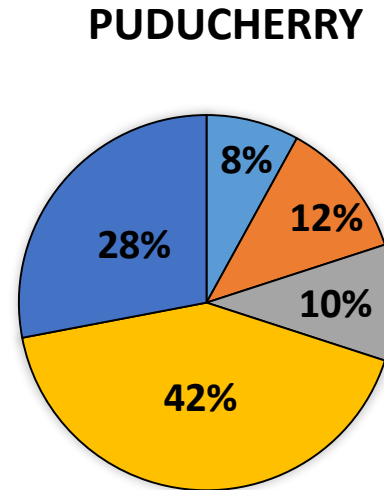
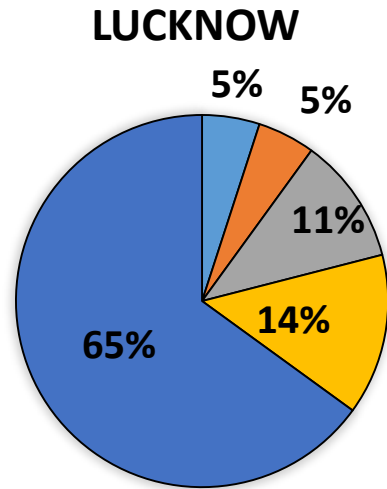
Change in the number of customers buying LED bulbs in the last year



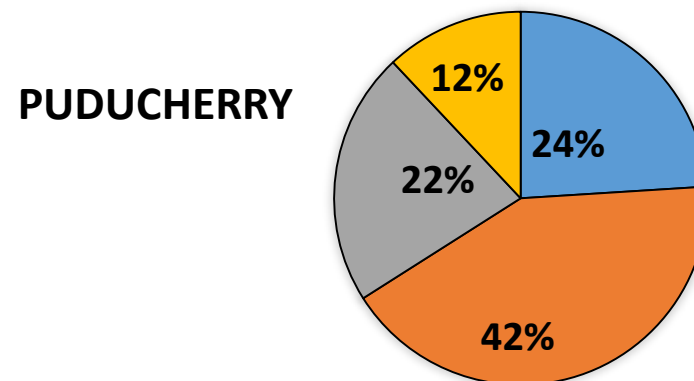
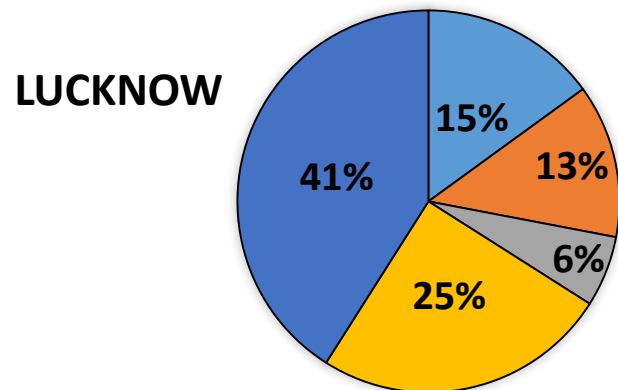
Change in the number of customers buying LED tube lights in the last year



Change in the number of customers buying incandescent bulbs in the last year



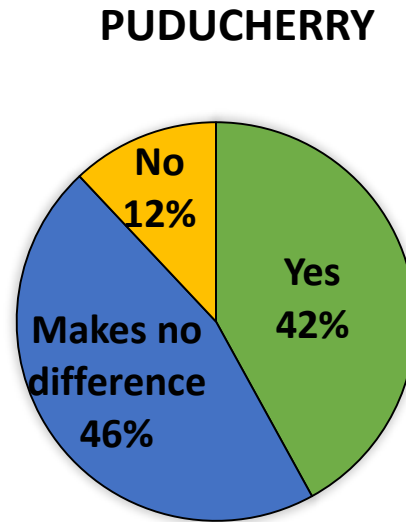
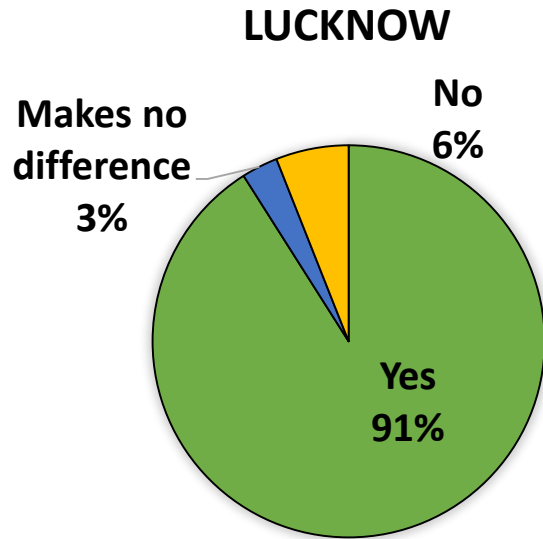
Change in the number of customers buying CFL bulbs in the last year



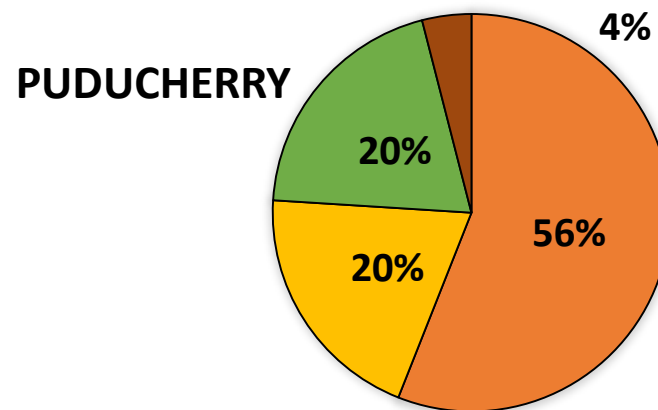
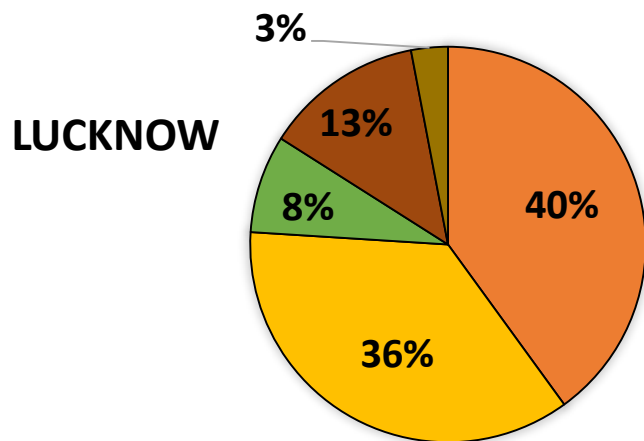
Price range and warranty of 7 Watt and 9 Watt LED bulbs

| | Watts | Minimum price(Rs.) | Maximum price (Rs.) | Average minimum price (Rs.) | Average maximum price (Rs.) | Modal warranty (years) |
|------------|-------|--------------------|---------------------|-----------------------------|-----------------------------|------------------------|
| LUCKNOW | 7W | 90 | 220 | 103 | 112 | 2 |
| | 9W | 90 | 200 | 120 | 137 | 2 |
| PUDUCHERRY | 7W | 40 | 250 | 108 | 139 | 2 |
| | 9W | 50 | 270 | 126 | 162 | 2 |
| OVERALL | 7W | 40 | 250 | 108 | 125 | 2 |
| | 9W | 50 | 270 | 131 | 140 | 2 |

Should the UJALA programme be continued?



If the government were to discontinue the UJALA programme, by how much do you think the prices of LED bulbs would increase?



- No change
- Rs. 10-30
- Rs. 30-60
- Rs. 60-100
- Response not provided