TD 608
Project Management and Analysis

Part I
Project Conception and Execution

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Lecture 2

Let us try and describe Gudwanwadi

What are the attributes?

- Lives and Livelihoods
  - farming, artisans, output, employment, seasonality, incomes
- Land use and agriculture
  - land quality, crops, irrigation, ownership and so on
  - forests, forest resources, bio-diversity, quality
- Water resources
  - sources and seasons, needs, quality
- Energy
  - household use, cooking, for agriculture and industry
- Health and Nutrition
  - malnutrition, food intake, accessibility to health care
- Amenities
  - Housing, schools, *anganwadi*,

Of course, different situations ..

will require different metrics. A rough comparison of how three different people would rate their problems:

Location	Liv.	Land	Water	Energy	Health	Amen.
Gudwanwadi	10	10	15	5	5	5
Dharavi	15	5	5	5	10	10
Hiranandani	5	2	2	5	10	30

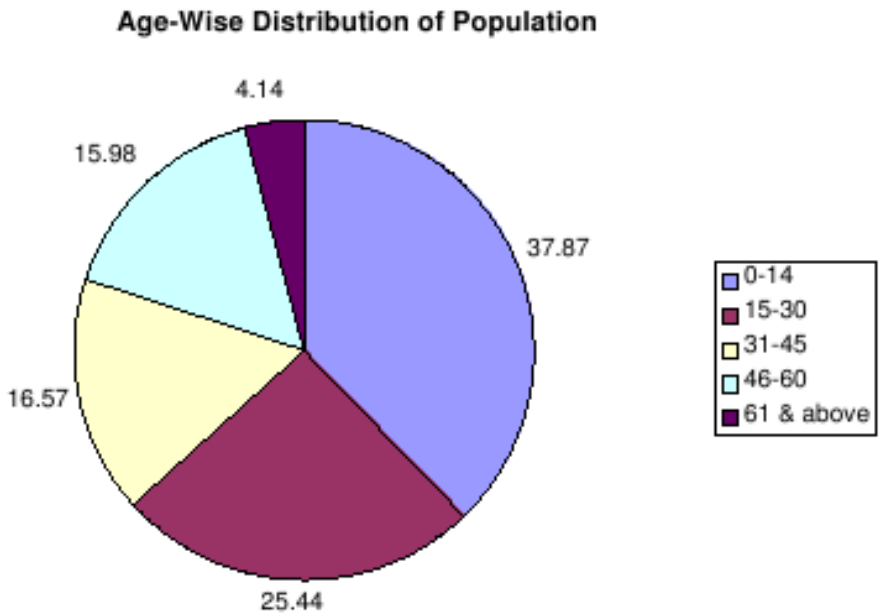
The same issue, say Amenities would mean:

- Gudwanwadi
  - presence of school and upto what level
  - presence of creche (anganwadi)
  - mid-day meal programs
  - visit of health worker and facilities
- Dharavi
  - schools-govt. vs. aided schools
  - hospitals and public health care systems
  - playgrounds and recreational facilities
  - housing and muncipal amenities

Coming back-Gudwanwadi

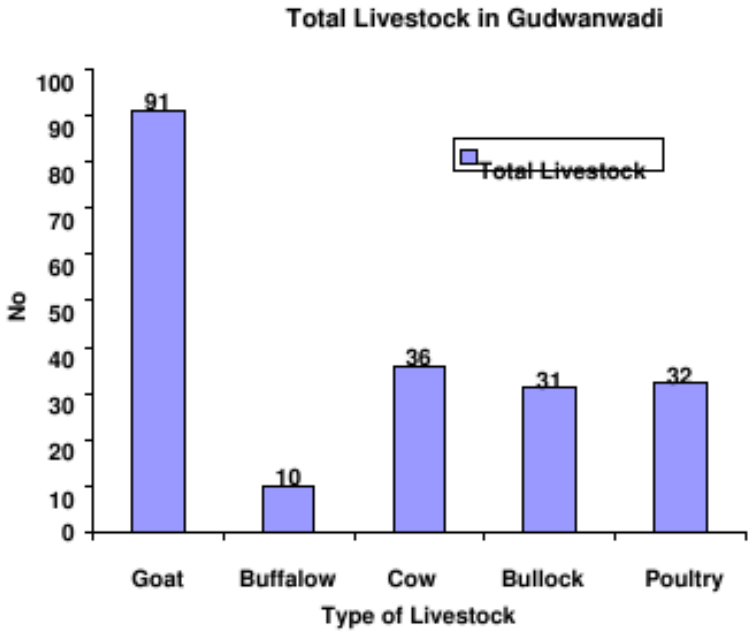
Lets see:

`http://www.cse.iitb.ac.in/ ctara/dam/presentations/gudwanfin.pdf`



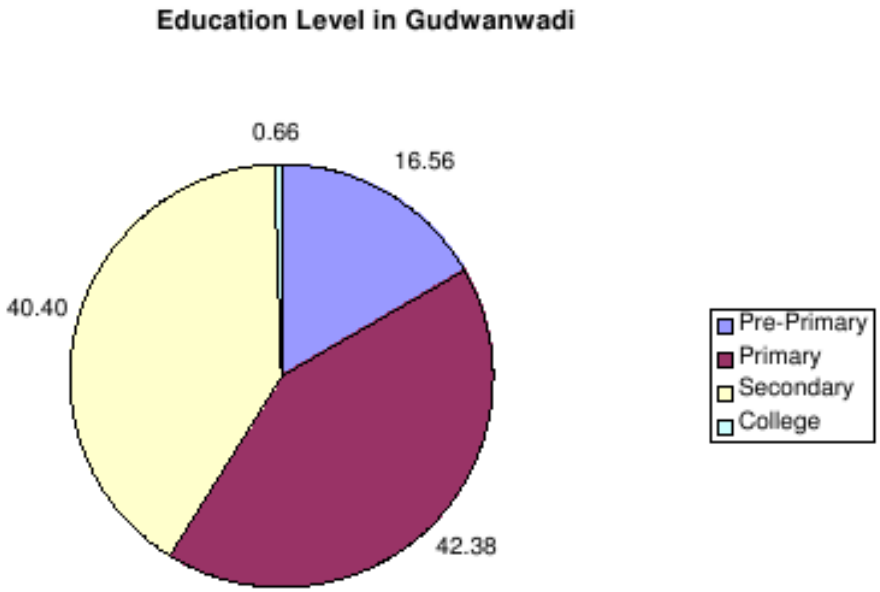
- Population 364 in 45 households, all *thakar*, a notified tribe.
- More than one-third of the age 0-14. Average fertility of 3.
- Very few (only 16, i.e., 4%) above the age of 60.

Livestock



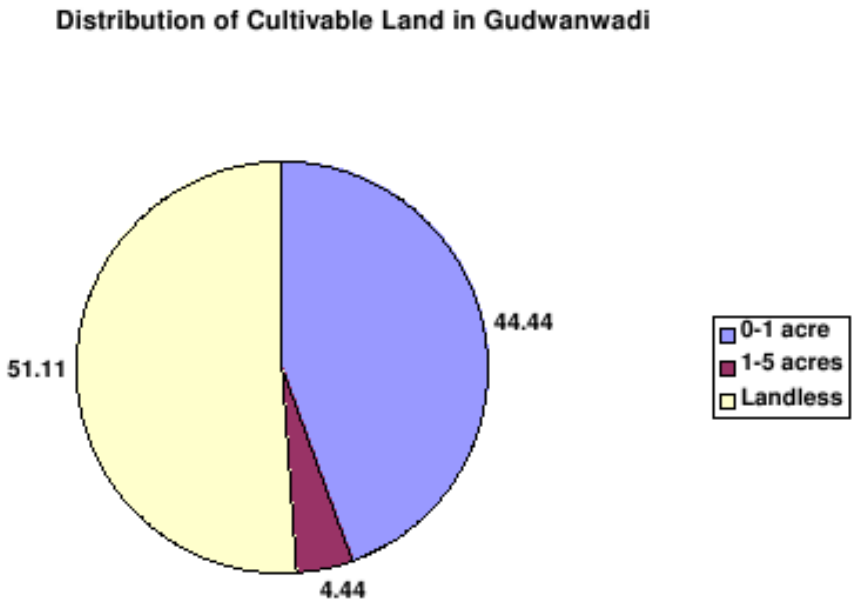
- Buffalo, Goats and Poultry around all season.
- Cows and Bullocks left to graze in the lean months
- 5 bullock-carts

School and Anganwadi



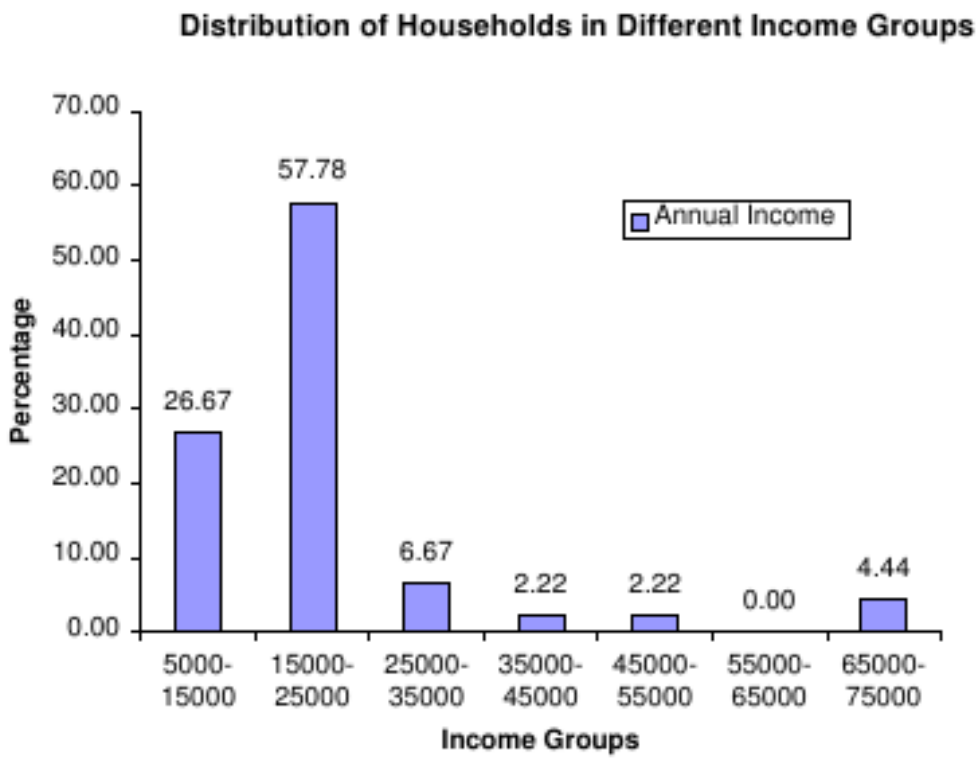
- One school and one anganwadi.
- One teacher in school, one teacher and one helper in anganwadi.
- Literacy 44% overall, but 90% for people below the age of 20.

Land



- Paddy Land-50 % households are landless, 40 % between 0 and 1 acre, 2 households between 1 and 5 acres.
- Poor quality land more plentiful.
  - Not owned by villagers but used for grazing and occasional coarse-grain crop.
  - Some forest departmentment ownership which can be used only informally.
  - Liable to be sold off to *Bombay-wallahs.*

Annual Wage Income



- Income in wages-average Rs. 20,000 per household.

Annual Income-Sources

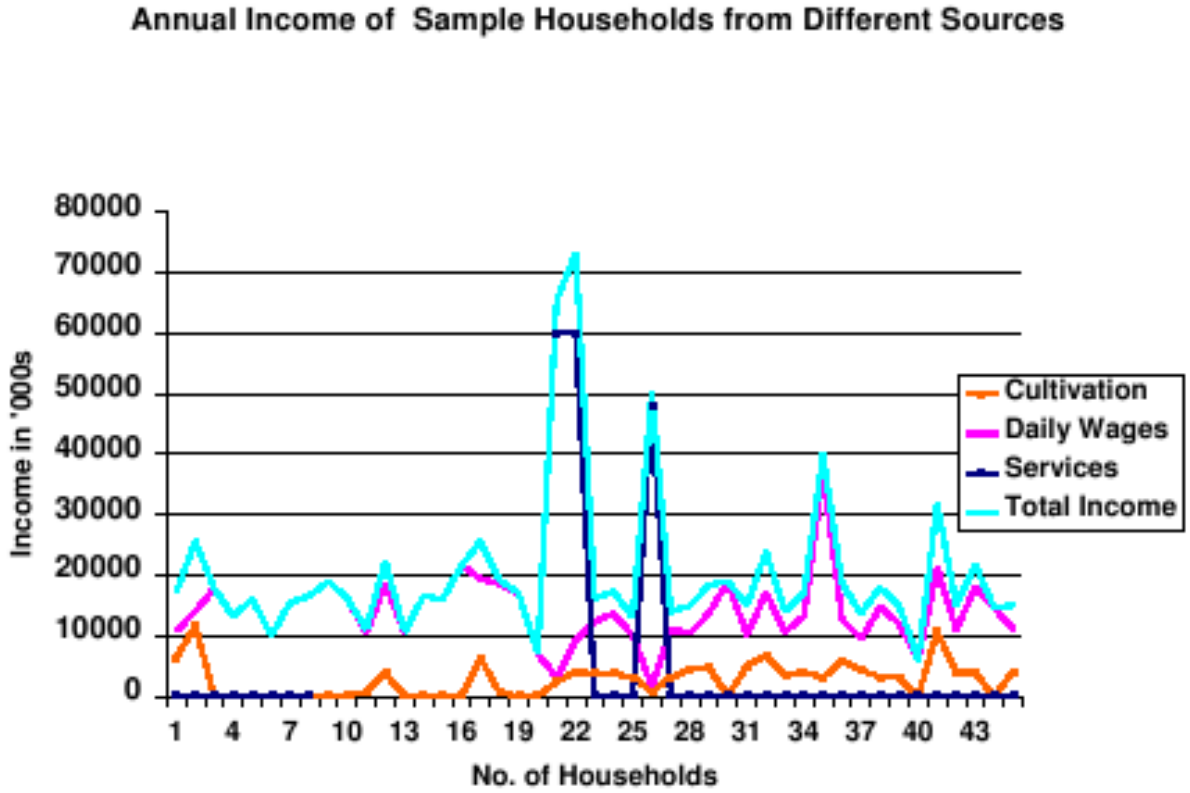
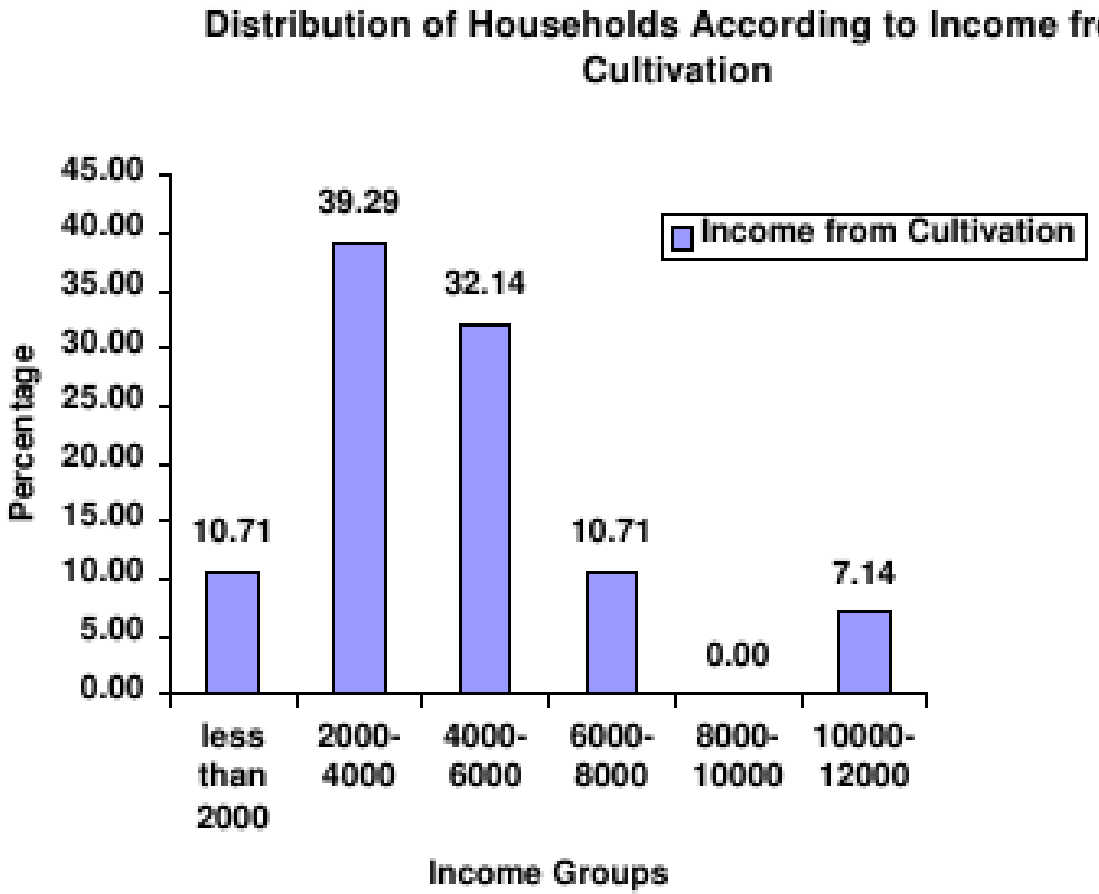


Fig 2

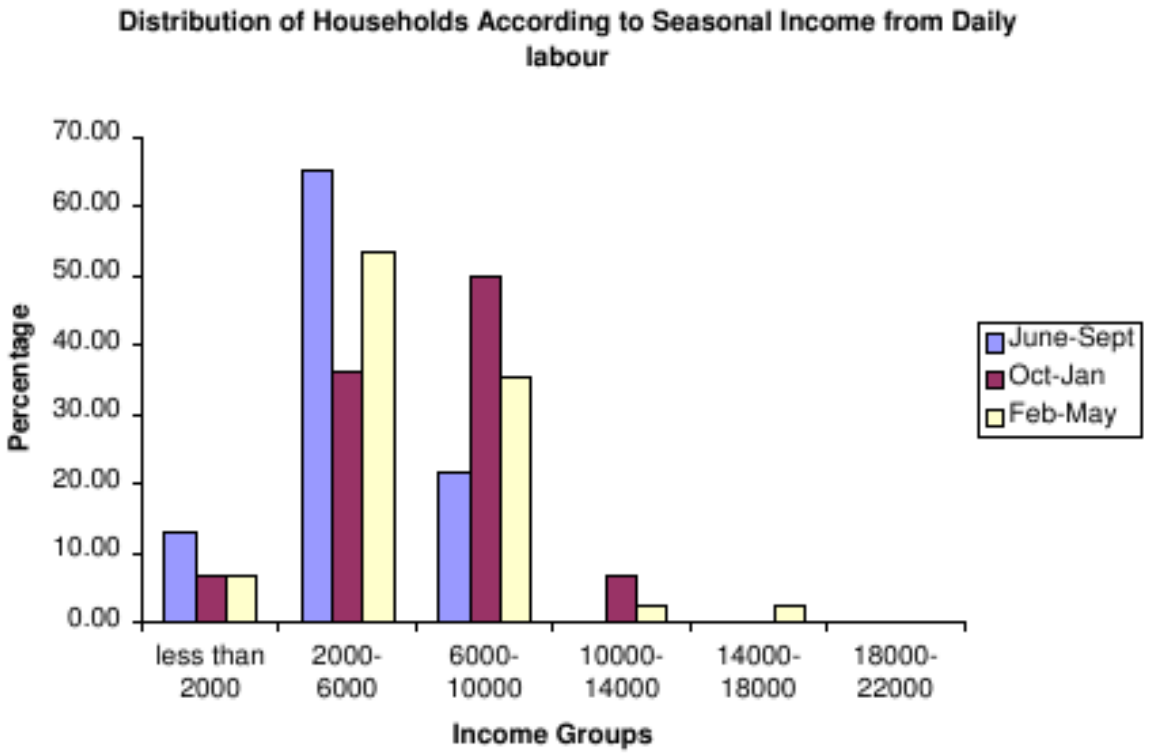
- Largely agricultural and informal labour
- One salaried persons. One skilled mason. One shopkeeper outside.

Income from cultivation-monetised



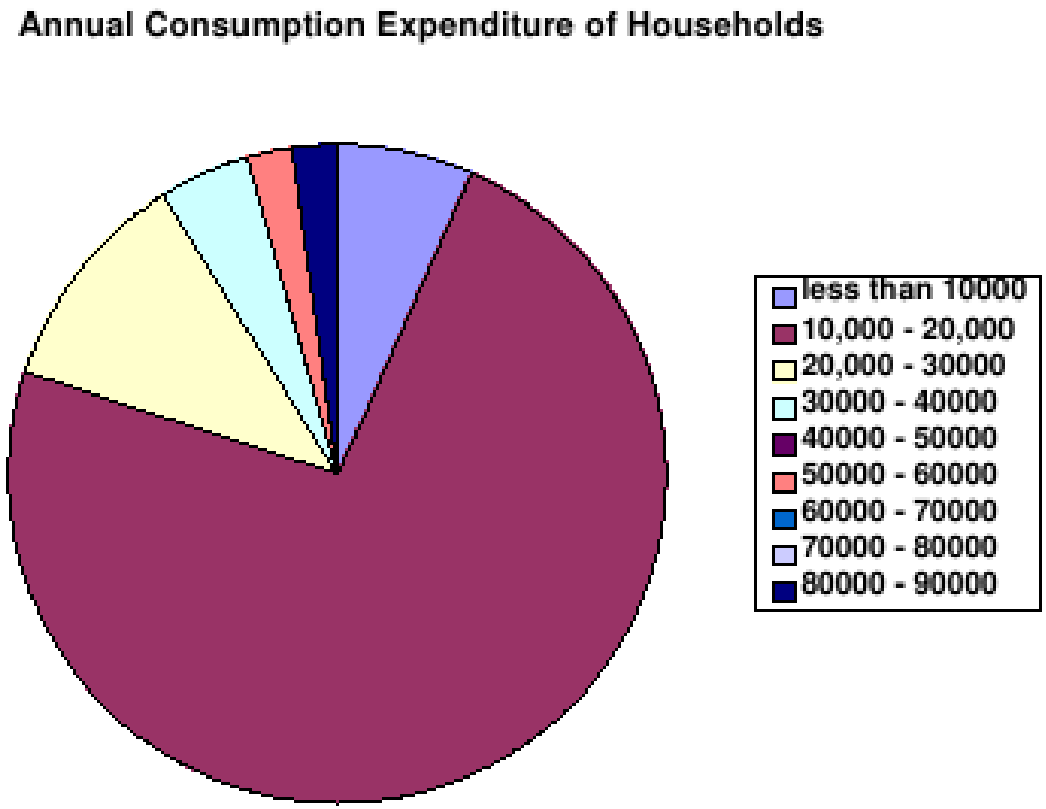
- At Rs. 8 per kg.
- Average procurement per household equivalent to 600 Kg. of rice.

Seasonality in Employment



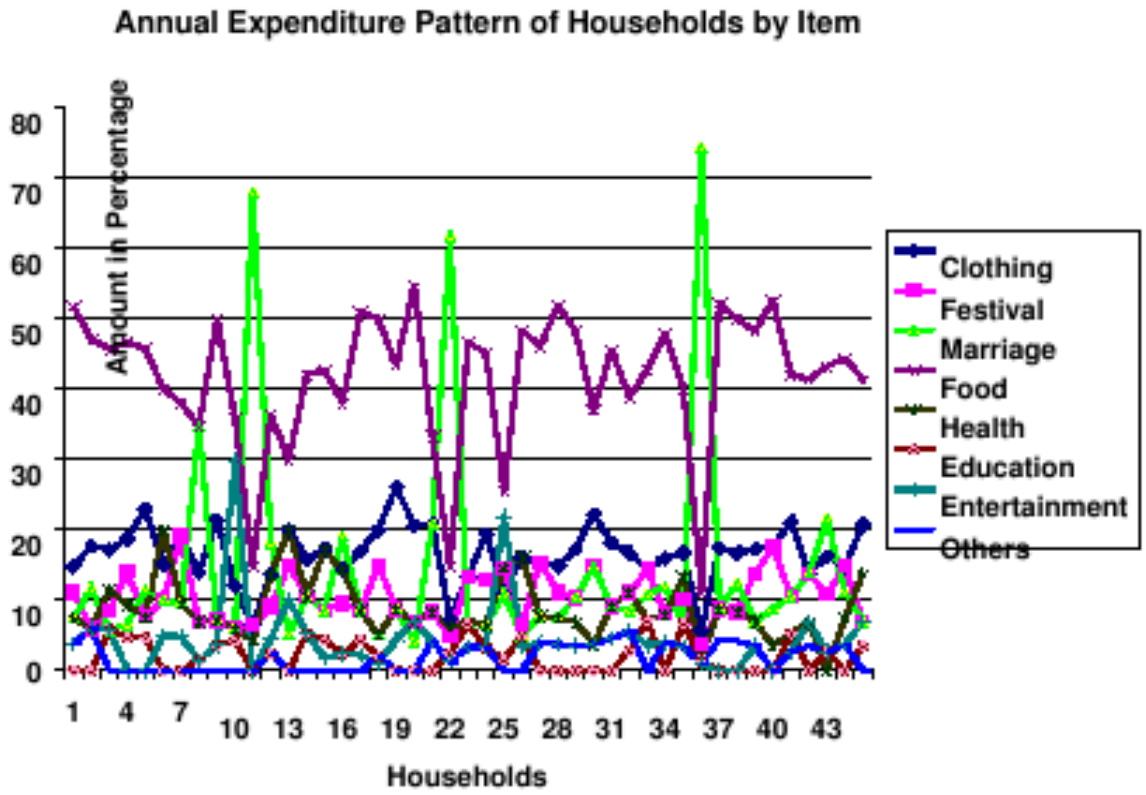
- Best time to work: Oct-Jan
- Summer months-depressed earnings due to stress .

Annual Consumption



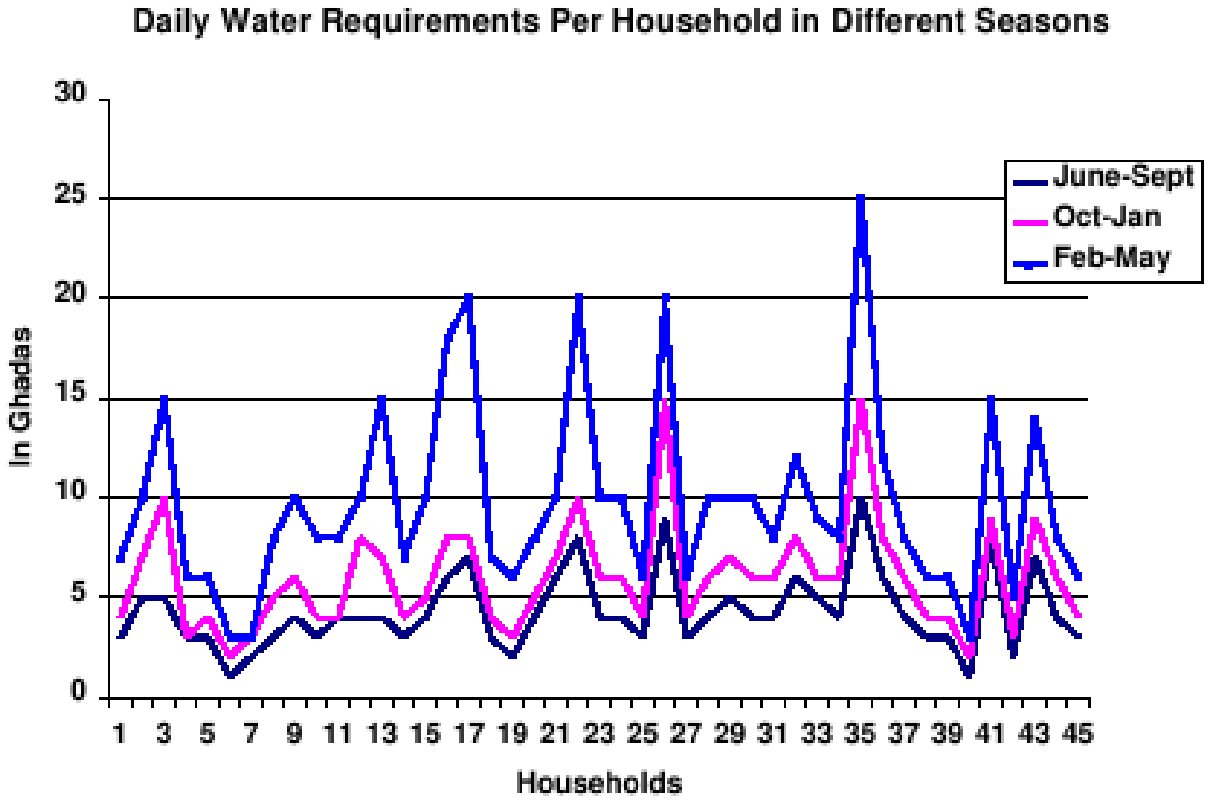
- Roughly matches wage incomes
- Hardly any savings, which go into the house and for occasions

Spending Patterns



- About 45% on food, and 20 % on clothing, closely followed by health.
- Festivals and Marriages also important spending items.

Water Requirements



- One *ghada* is roughly 12 liters.
- Low in the monsoon months, since streams running.
- Rises as the summer approaches, when outside sources dry up.

Energy

Requirement	Source	Remarks
Cooking	Firewood Women	Adequate but huge physical efforts
Fetching Water	Women	Substantial Drudgery esp. summer
Lighting	Kerosene	Small need
Irrigation	Absent	-
Farm Processes	Men and Women Bullocks	Hard Work Adequate
Sundry	Bullock Cart	More sources required

- Electricity: largely unavailable and unused.
- Bullock Cart is the general purpose source of energy but is difficult to maintain.
- Negligible carbon-footprint

Health, Nutrition and Amenities

- Diet : Rice, Mug Dal and occaional vegetables and meat.
- Calorific values and seasonality : Important but not measured.
- Infant Mortality : 2 infant deaths in the last one year.
- Malnutrition : 7 borderline children.
- *Anganwadi*: single source monitoring and service:
  - Creche, with 2 workers.
  - meal and nutrition program for 0-8 age-group.
  - village level health-monitoring and medicine dispensing.
  - advice on maternity and childcare.
  - liaison with state-level health care apparatus.
- Nearest PHC: Kashele.
- School upto 8th standard, non-resident single teacher.
- Monthly visit by state government doctor.
- Grain bank by NGO, housing loans through NGO and Indira Awas Yojana.

System Description-Choose the indices

- Social
  - Population, gender, age-group, livestock, livelihoods, health, nutrition.
- Economic
  - micro-economic: Incomes and spending, sources of income, assets and skills, ownership of assets, indebtedness.
  - macro-economic:: money flow and balance, capital generation and net savings. Surplus.
- Material
  - Energy flows (firewood, kerosene), generation and consumption of un-monetised commodities such as forest produce, agricultural produce.
  - Material balance
- Community Assets and Amenities
  - Schools, creches, common ownership lands, health care facilities.
- Industry
  - local industries, cottage and factories, nature of ownership, produce.

System Description-Base-line Survey

- The Methodology
  - Large communities vs. Small communities.
  - Selection of sample and its atributes and statistical significance.
  - Questionaire preparation and training of sample-taker.
  - Community meetings and discussions.
- The conduct of the survey
  - implementation of methodology
  - long-term monitoring and seasonality
- Preparing the report
  - Classification and presentation of data.
  - Pointing out exceptional trends.
  - System level understanding in terms of assets and flows.

A novel approach

Based on "A. W. Date, **Energy Utlilization Pattern of Shilarwadi**", *Ind. J. of Rural Tech.* **1** (1989) 33-63.

Highlights

- *Shilarwadi*, a thakar tribal village 5km. from *Gudwanwadi*.
- An energy flow statement, as opposed to a monetary or economic statement.
- A system partition into three components:
  - The Market: source and recipient of all goods and services external to the village.
  - The village: people, livestock and agriculture.
  - Modelling the Ecosystem: as a source and recipient of services and goods.
- A quantitative analysis of the energy flow between these components, the agents and the activities.

- Of extreme relevance today.

Motivation

- To identify different areas of rural life demanding different energy sources, end-use and energy conversion.
- To identify rural activities consuming significant amounts of energy from different sources.
- To highlight the use of non-commerical energy sources in the sustenance of rural life.
- to understand the economic and ecological implications, and to reflect on the policy alternatives.
- to assist in the development of alternatives in a conscious transition from current depravity to a better quality of life.

In other words:

- understand the current state
- help in the conception of a Project

The Base-line Survey

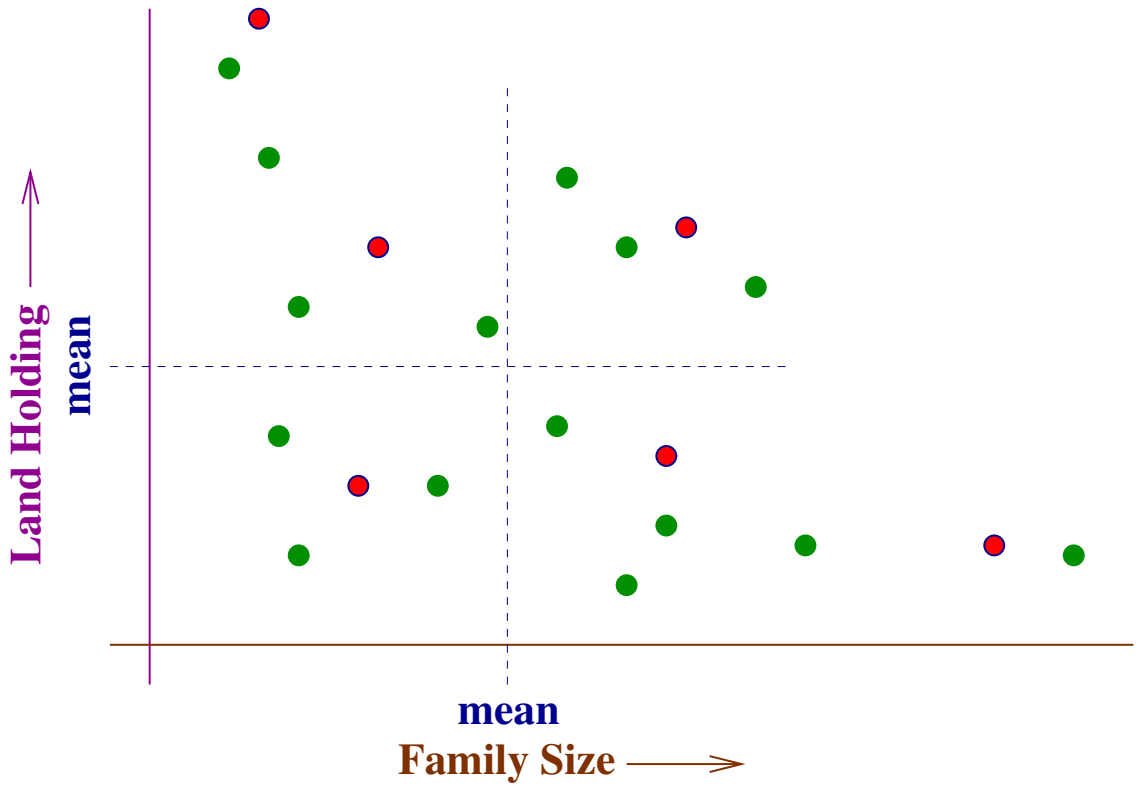
- Population Study -270, in 46 families.
- Land -1.49 acres/person, of which 0.24 paddy and 0.49 sloping.
- Livestock wine 261 animals of which 213 cattle.
- Commons -3 acres, 45 fruit-giving and 101 large trees.
- Water -3 wells, drying in January, March and April.

Other facts

- Average paddy yield: 515 bundles (775 kg.) per acre.
- Paddy straw: 600 bundles per house for roof thatching.
- Nachni straw: 1000 kg. per acre.
- Seven types of agricultural, Five each of carpentry and hunting tools.

Selection of sample for detailed study

- Plot land-holding vs. family size .
- Form 4 compartments around the means of both.
- Select 0ne from each compartment.
- Select two out-liers.



Thus, a sample of 6 was chosen for further year-long study.

Methodology-Establishing Unit Costs

- List common activities and calculate the energy spent in each activity in Kcal/min

Cooking	1.9	Firewood collection	4.54
Fetching Water	5.0	same (child)	3.0
Gobal collection	4.0	Branch Cutting	5.68
Soil digging	8	Agri. labour	4.3

- Energy from different sources

Firewood	4000 kcal/kg	Kerosene	8500 kcal/liter
Animals	2100 kcal/hr	Dung (fuel)	2444 kcal/kg
Rice, Nachni etc.	4000 kcal/kg	Meat	1700 kcal/kg

Steps 2 and 3

- By observing the number of hours spent in each activity, we obtain:

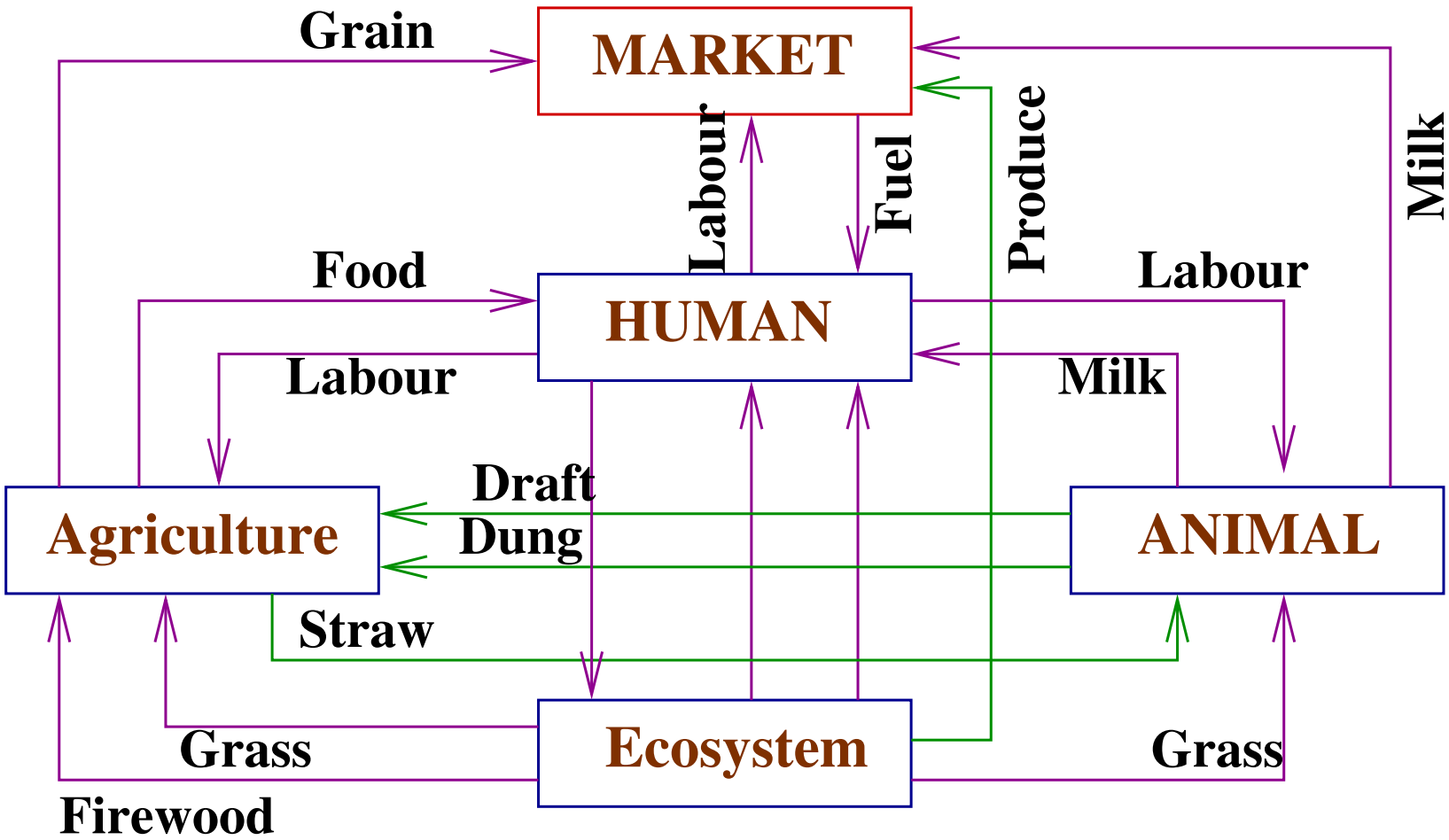
Activity	Hours	$10^6 \times$ kcal
Forest Cutting	12000	7.056
Produce collection	38202	8.05
Agr. labour	5400	1.2
Other	8400	1.72

- Other sources of energy

Cooking firewood	39095 kg	156.38 Gcal
Heating	35593 kg	142.37 Gcal
Rab	42750	171.00 Gcal
Kerosene	2737 liters	23.26 Gcal
Animals	4132 hrs	8.68 Gcal
Dung	72 tons	109.8 Gcal

Finally Step 4 and The System

- After observing the yearlong eating habits, average diet is 1651 kcal/person/day.



In Total

- Sectoral energy flows clearly outlined.
- The importance of the eco-system in the sustenance of the people of Shilarwadi.
- Importance of Rab and cow-dung in agriculture.
- Poor nutrition of the average person.
- 40 hours/month/family on fetching water and 20 hours/month/family on firewood.
- Poor productivity of paddy.

Comparing Gudwanwadi and Shilarwadi

- Larger dependence on wages in Gudwanwadi.
- Larger land holdings in Shilarwadi.

Next: Project Conception

Discussion

1. We see that people at Gudwanwadi engage on non-agricultural employment. What do you think is the need for it? Is this special to this village?
2. Are there any headings (for describing Gudwanwadi) that we have missed? How would a social scientist describe Gudwanwadi? And a marketing manager for Hindustan Lever?
3. What is the purpose of using energy flows in Prof. Date's paper? Would this be a useful technique for describing Mumbai? How is Mumbai typically described?
4. What are the stated objectives of the paper? Are they achieved?
5. Is there any issue with the paper's energy budgets? Is it reasonable to compare different forms of energy?
6. Discuss the importance of non-food agricultural produce at Shilarwadi.