PATTERNS OF TIME USE AND HAPPINESS IN BHUTAN: Is there a relationship between the two?

Karma Galay, Chief Research Officer, Centre for Bhutan Studies

Part One: Background

Gross National Happiness (GNH) was promulgated as Bhutan's philosophy of economic and social development by the Fourth King of Bhutan as soon as he came to the throne in 1972 (Thinley, 2007). It refers to a set of social and economic interventions that evaluate societal change in terms of the collective happiness of people and that lead to the adoption of policies aimed at that objective. Premised on the belief that all human beings aspire to happiness in one way or another, the concept emphasizes promoting the collective happiness of the society as the ultimate goal of development.

GNH emphasizes the importance of meeting both the mental and the physical needs of individuals. In other words, it emphasizes that happiness is a function both of fulfilling material wants as well as mental and spiritual needs. The philosophy of Gross National Happiness considers economic growth as one of the means towards achieving happiness and not as the ultimate objective of development.

GNH emphasizes that happiness must be realized as a collective or societal goal and not be defined as an individualized or competitive good (op. cit.). It recognizes the importance of individual happiness as well, but it believes that the path to individual happiness can be paved better through a happy society. No individuals can be happy or pursue things that would make them happy if society at large is chaotic and unhappy.

The concept of GNH assumes that public policies based on happiness would be far less arbitrary or prone to conflict than policies formulated out of concern for economic and material gains. It nevertheless, does not rule out the possibility of conflict among individuals or groups of individuals. It is important for such conflicts, if they arise, to be resolved in a way that does not violate moral rights. The concept emphasizes the importance of establishing institutions to resolve such conflicts.

Development initiatives based on GNH values are not restricted to the present population of any given society; it includes future generations and other societies, indeed all sentient beings. GNH emphasizes that our current pursuit of development should not cause misery to future generations. It should also not bring problems to other societies or to other sentient beings, as understood in the Buddhist concept. In other words, one's pursuit of happiness should not cause unhappiness or misery to others. This implies a critique of some lines of contemporary development theory and social philosophy.

Guided by this profound policy, Bhutan has made rapid development in a short period of time. All these achievements have come with very minimal impact on its culture and environment. The Royal Government implemented these policies through strict adherence to the four pillars of GNH: equitable and sustainable socio-economic development, preservation and promotion of its culture, conservation of environment, and promotion of good governance. While these pillars have guided policy so far, it is not very clear how the ideas or values of GNH have been and will continue to be transformed into practical plans and policies. There are no indicators to gauge the progress of the country in terms of GNH values or principles. In the absence of any practical indicators to plan, monitor, implement and evaluate policies and programs, the likelihood of formulating policies driven by non-GNH values is very high. Recently, Bhutanese policy makers have realized this shortcoming and have taken initiatives to develop specific indicators to measure GNH. A set of nine indicators have been chosen. They are:
i) Psychological well-being,
ii) Health of the population,
iii) Education,
iv) Time use and balance,
v) Community vitality,
vi) Cultural diversity and resilience,
vii) Ecological diversity and resilience,
viii) Living standard, and
ix) Good governance.

Studies are currently underway in Bhutan to test and validate these indicators. A pilot survey based on these indicators was conducted recently. This study concerns the analysis of survey results of one of these indicators: time use and balance.

Part Two: Theoretical Context

Time is an important resource for everyone. It is also a limited resource in that we have only 24 hours in a day to put to competing uses. How we use this limited resource is important and has implications to our economic and social well-being.

Given this importance, the use or allocation of time has been studied by academics and policy analysts since the early twentieth century (Harvey & Pentland, 1999). However, more systematic collection of time use data originated only in 1924 when significant quantities time use data were collected by Soviet Union (Juster & Stafford, 1991). Since then, smaller "bits and pieces of information" on time use were collected with a focus on specific activities such as leisure and travel patterns, but it was not until 1960s that more systematic attempts was made to collect comparable data for large group of countries. The first such study was conducted by Alexander Szalai in 1963 for a group of 13 countries (Harvey & Pentland, 1999).

Eventually as research progressed, academics formulated a theory of time allocation, providing a proper framework to study time. In 1965, Gary S. Becker introduced the theory of allocation of time in which time was considered to have a cost on the same footing as the cost of market goods. At the heart of his analysis were households which were seen as both producers and consumers. He propounded that households produced commodities by combining inputs of goods and time according to the cost-minimization rules of the traditional theory of the firm. Quantities of commodities produced are determined by their utility maximization function subject to prices and constraints on resources. In other words, time is seen as a scarce input which is allocated between alternative productive activities as determined byutility maximization and its cost in relation to other factors.

Since the 1960s, time use studies have been carried out in most of the industrialized countries, and lately in developing countries as well, in five to ten year intervals (Juster & Stafford, 1991). Much bigger multinational time use studies have been carried out recently; the EUROSTAT conducted time use studies in 18 European countries in 1996 and 1997 (Harvey & Pentland, 1999).

Turning now to the context of the study, i.e. the rationale of choosing time use as an indicator for Gross National Happiness, let me begin by saying that time use studies provide useful information missing in conventional economic accounts. System of National Accounts which is used to calculate GDP does not measure productive activities accurately. A national accounting system that fails to recognize the total productive capacities could lead to conception and implementation of policies that are useless and harmful. In addition to paid work, productive

activities include a series of unpaid activities such as household work, childcare, care of sick and old, and time allocated to various other activities for the upkeep of societies. In addition to activities done for oneself and members of one's household, productive activities also include voluntary activities carried out for members of the community or for people outside one's community. These activities are fundamental to the well-being of both those who provide and receive such services. A true picture of well-being can be obtained only if these activities are taken into account. Time use studies provide information on such activities that are fundamental to the well-being of society.

The detailed nature of information collected by time use studies enables policy makers to understand the needs of special groups of people such as the old or disabled. As people age, their demands for assistance and care increase. If these demands are not satisfied, the well-being of the old and sick will deteriorate (Andorka, 1987). Similarly, it is important to have adequate information on time parents devote to their children. The quality of care children receive is correlated with their cognitive development (Hill and & Stafford, 1980). Sound policies related to these issues can only be formulated with the help of such detailed information.

Time use studies give information on what people actually do in their lives and, therefore, provide information on work and labor allocation (including that of children) within households both at a point of time and over a period of time. Time use studies are therefore, very useful for understanding the overall transformation or change experienced by societies. Such information is useful for designing comprehensive and balanced economic and social policies; needless to mention, the well-being of societies can only be improved by informed policy formulation.

Time use studies provide information on work life balance of individuals in society. They provide information on the number of hours an individual spends on work and other activities such as socialization with family and friends, sports, and other leisure activities. Imbalance in time allocation between work and other activities is caused by a number of factors amongst which the increased number of work hours is the most prominent. An increase in work hours, in turn, is, among others, caused by one's desire to make more money. Money becomes the focus or the driving force behind long hours of work to many individuals. These individuals exaggerate the importance of money to their well-being and get into a situation of what has been called "focusing illusion". As they devote more time to work they do not find time to do things that they enjoy. Such people are not happier but are much more stressed than others (Kahneman et al., 2006). The European Quality of Life Survey of 2003 revealed a strong correlation between time use and subjective well-being. In most of the countries covered by the survey, it was found

that people who had long work hours and poor work-life balance generally had low subjective well-being (Böhnke, 2005).

As individuals juggle to do so many things, they easily become stressed. Research has documented a series of stress related impacts on the health of workers. Workers in high-strain jobs have been shown to have a higher variety of disease than their fellow workers who are not or less stressed. Cardiovascular disease, gastro-intestinal disorders, musculoskeletal problems, and the immune system are all affected by stress. Behavioral problems such as poor relations with colleagues, absenteeism, and loss of self-confidence and self-esteem are often caused by stress. All these consequences affect both actual as well as perceived well-being of individuals.

Time use data enables academics, policy analysts as well as policy makers and implementers to understand poverty better. "A significant part of the survival of poor households in developing countries is through home production", for which time available to their members constitutes the main resource (Ilahi, 2000). The more time they spend at work, the less time they have for leisure and, to the extent leisure is important to well-being, it could be said that the poor not only suffer from economic poverty but also from time poverty and therefore low well-being. This has been substantiated in the findings of studies by the World Bank in Sub-Saharan Africa. These studies revealed that poor farmers, especially women, face competing demands for their time use (Blackden et al., 2005). They work in the farm, cook, attend to the sick, fetch water, tend to animals and do a host of other household activities. They do not find time to take up other productive activities even if there are opportunities to do so. They are often unable to take their sick children to health clinics because they are tied to several activities. They are not able to send their children to school even if there is an opportunity to do so. Children are required to stay back to help their parents who are caught up in unending cycles of work. In such cases, time poverty reinforces economic poverty. Understanding such situations would enable formulating better policies to combat poverty.

In addition to the above utilities of time use studies, they merit to be included as an index of Gross National Happiness for a number of direct linkages they provide to assessing the well-being of individuals. Juster, Courant and Dow (1985) developed a concept called "process benefits" which refers to well-being derived from doing an activity independently of its end results. According to these scholars, "time plays a crucial role not only as an input into a variety of market and non-market production activities, including leisure, but that time use is equally important as a direct source of satisfaction." In other words, activities that an individual engages in not only yield "observable and measurable outcomes in the form of market and non-market

goods" but outputs in the form of satisfaction from doing those activities. Such information can be obtained and understood through time use studies.

In 2004 Kahneman, Krueger, Schkade, Schwarz, and Stone developed a method called Day Reconstruction Method (DRM) to quantify subjective well-being. Respondents, which comprised of 909 working women from Texas were asked to reconstruct their previous day in terms of how they spent their time and how they experienced a particular activity. It asked the participants to rate different activities in terms of levels of enjoyment they had and it was found that socializing with friends and other leisure activities topped the enjoyment scale while being with boss and commuting to work were at the bottom of the scale. They next used the scale to characterize effects of variety of circumstances and observed a very strong positive correlation between the scale of enjoyment and circumstances. For instance, women who did not sleep well the previous night did not enjoy activities they engaged in the next day. By enabling researchers to determine the way people spend their time and experience their activities, time use studies provide a meaningful lead to assess the well-being of individuals.

In 2006, Kahneman and Krueger developed another method to quantify or measure well-being. They developed a concept called U-Index which is defined as "the proportion of time an individual spends in an unpleasant state"; "an episode is classified as unpleasant if the most intense feeling reported for that episode is negative." Using time use data, they show that respondents "who report less life satisfaction as a whole spend a greater fraction of their time in an unpleasant state."

From the above review of literature it is clear that time use studies provide critical information related to allocation of time (a scarce resource) and its distribution among different members of households. It provides data which could be used to assess the impacts of policies, compare cultures and societies, gauge lifestyle changes, and to assess the needs of special groups of people such as the old and disabled. From the perspective of the present study, time use studies address several shortcomings of GDP-based measures of progress or development. They provide information on unpaid work, voluntary work and other community activities. These activities are all very vital to the well-being of individuals. More importantly, time use studies enable researchers to assess or understand the well-being of individuals directly.

Within the context of above literature, this study intends to address three objectives: i) to find out amount of time respondents allocated to various activities and, by doing so, to identify the amount of household work, care work and other unpaid work normally not included in

conventional economic accounts, ii) to find out how patterns of time use differ by gender, age, and other social and demographic characteristics of respondents, and iii) to assess how patterns of time use relate to reported levels of happiness. The remaining part of the paper is organized into parts three through seven. Part three provides an overview of the survey questionnaire and describes the methodology of the survey and its analysis. Part four reports the time spent on various activities. Part five discusses time allocation to these activities in terms of demographic, economic and social characteristics of the respondents. Part six studies the relationship between time use and the reported level of happiness or well-being that people enjoy in their life. Part seven summarizes the findings and points out some policy implications as well as some directions for future time use surveys in Bhutan.

Part Three: The Survey

The survey was conducted between October 2006 and January 2007. It was carried out in nine districts of Bumthang, Chhukha, Lhuntshe, Mongar, Paro, Punakha, Sarpang, Thimphu, and Trongsa. Within districts, careful attention was paid to select samples from both urban as well as rural areas. A total of 350 individuals were interviewed.

The questionnaire for the survey comprised of ten sections- one section that carried questions on basic demographic and household details of the respondents and a set of questions on each of the nine indicators. The section on time use was comprised of four subsections- i) Time stress: This subsection collected information on respondent's perception of time pressure: how often they felt rushed, whether they felt more or less rushed compared to few years ago, how often they felt they had time that they didn't know what to do with, if they felt stressed when they didn't have time, etc. ii) Time Allocation: This subsection recorded various activities and the corresponding time spent on them by respondents during the previous day as well as time spent on some selected activities over longer period of time. iii) Enjoyment of activities- Respondents were asked to rank the level of enjoyment they had for each activity that they engaged in terms of "A Lot", "Somewhat", and "Did not Enjoy". iv) The final subsection of questions on time use asked people to evaluate whether they spend "too much", "about the right amount" or "not enough" time on particular activities. This study analyzes data pertaining mainly to ii), i.e. allocation of time to various activities, as well as using some part of i), i.e. time stress.

Questions on the context of the activities- with whom and where they were carried out were deliberately left out. It also did not ask whether the activities were paid or unpaid. As mentioned earlier, the survey comprised of questions on eight other indicators and inclusion of contextual

questions on time use would have made the questionnaires unwieldy. Another limitation in data collection that needs to be pointed out is the focus on primary activities. Since respondents were asked to recall activities in sequential order, questions did not capture much information on the activities that respondents would or might have carried out simultaneously along with the reported activities.

Data Collection

Data on activities carried out by the respondents and the amount of time spent on each of them was collected through recall method. People were asked to recall in sequential order all the activities that they carried out during the day before the interview with the begin time and end time for each activity.

Data Classification

Unlike conventional time use surveys, activities were not classified before hand. In order to classify them, various classification systems used in time use surveys both in developed as well as developing countries were referenced. Classification systems used by developed countries were mostly designed on the basis of activities in fully monetized economies and often had a specific focus such as to capture unpaid or non-economic work. The purpose of this survey, however, was to capture all economic and non-economic activities performed by respondents. So, the classification system used by developed countries was not relevant. Of the ones from developing countries, those used by India provided a good insight (Hirway, 1999). Drawing ideas from this, activities were classified according to the type of sectors they belonged to. The following categories of activities were obtained:

1) Crop farming and kitchen gardening; 2) Animal husbandry; 3) Forestry and horticulture; 4) Processing of food; 5) Construction and repairs) 6) Craft related activities 7) Business, trade, and service; 8) Household Maintenance and Management; 9) Care of children, old and sick household members; 10) Community participation; 11) Social and cultural activities; 12) Religious activities; 13) Education and learning; 14) Sports, leisure and mass media use; 15) Personal care; 16) Mining and quarrying; and 17) Visit to public offices and functionaries

The above activities could be further categorized into broader groups such as primary, secondary and tertiary activities. In order to have as detailed or many categories of activity as possible, they have not been categorized further.

The unit of measurement of time is minutes for all activities. Data is tabulated to generate the amount of time devoted to each activity. The data is then cross-tabulated with various demographic and civil/social variables of respondents. A simple correlation is run at the end to test the statistical significance of correlation between reported level of happiness and patterns of time use.

Part Four: Empirical Results

4.1. Sample Characteristics

As noted earlier, 350 individuals from varying socio-economic backgrounds were covered by the survey. However, for the analysis of time use patterns, only 289 responses could be used. Some information vital for time use analysis was missing in 61 responses. Of this total, 152 (53%) were females and 137 (47%) were men. 81 (28%) respondents were from urban area, 208 (72%) were from rural areas. The average household income was Nu. 100,160 ($ 2,455) and mean personal income was Nu. 71,914 ($ 1,763). Table 1 provides a snapshot of demographic, economic and social characteristics of the respondents.

Table 1: Demographic and social characteristics of sample population

Characteristics	N	%
Gender		
- Male	137	47.4
- Female	152	52.6
Age Group		
- Below 15 years	4	1.4
-16-30	101	34.9
-31-45	92	31.8
-46-60	57	19.7
-Above 60 years	35	12.1
Marital Status		
- Married	209	72.3
- Never married	55	19
- Divorced	13	4.5
- Separated/widowed	12	4.2

Level of Education		
- College or University education	38	13.1
- High school or less	40	13.8
- Primary school or less	34	11.8
- Monastic education (including *gomchen*)	14	4.8
- Non-formal education	32	11.1
- Vocational education	4	1.4
- No education	127	43.9
Status of Employment		
HYPERLINK "" \l "RANGE!A85#RANGE!A85#RANGE!A85#RANGE!A85" - Employed (includes farm family members actively working)	194	67.1
- Unemployed and looking for work	3	1
- Students	24	8.3
- Housewives (homemakers)	46	15.9
- Retired	5	1.7
Income:		
HYPERLINK "" \l "RANGE!C36#RANGE!C36#RANGE!C36#RANGE!C36" - Household	Nu. 100,160 ($ 2,455)	
HYPERLINK "" \l "RANGE!C37#RANGE!C37#RANGE!C37#RANGE!C37" - Personal	Nu. 71, 914 ($ 1,763)	
Residence:		
- Rural	208	72%
- Urban	81	28%

4.2. Patterns of time use

A total of 160 different activities or episodes were revealed by the survey. The mean activity per respondent was 17.6. The following section looks at the pattern of activities and amount of time

spent on them.

4.2.1 Crop farming and kitchen gardening

This category includes activities such as clearing fields, digging or plowing fields, applying manure, weeding fields, and the harvesting, threshing, and transporting of crops. All travels undertaken for the above activities are included as well.

54 respondents (i.e. 19% of the sample population) reported involvement in activities related to farming and kitchen gardening. The most common activities were digging fields, kitchen gardening, and harvesting of grains. They spent an average time of 363 minutes (over six hours) on these activities.

Table 2: Average time spent on activities related to crop farming & kitchen gardening

Activities	Time	N	Std. Deviation
Applying manure	523	2	45.96
Digging farm	385	9	121.86
Kitchen gardening	172	9	111.02
Harvesting	414	7	231.24
Plowing	236	4	184.27
Threshing	120	2	84.85
Transporting	135	2	21.21
Weeding	90	2	42.43
Clearing field and other agriculture work'	268	5	230.80
Total	363	54	193.83

4.2.2 Livestock related activities

Activities included under this category are preparing feed, feeding animals, milking cows, grazing animals in forests, putting animals to shed, cleaning sheds, shifting cattle from one pasture to other, mating of animals, and putting up tents for the herders. Travel related to above activities is also included.

87 respondents (30 % of the sample population) reported involvement in livestock related activities and average time spent on them was 169 minutes. Feeding cattle was the most common activity in which 55 respondents participated and spent an average of 63 minutes on it. Highest mean time was recorded for herding cattle which was carried out by 36 respondents.

Table 3: Average time spent on activities related to livestock

Activities	Time	N	Std. Deviation
Animal care	95	13	93.83
Feed preparation	63	55	67.52
Feeding	214	36	200.15
Herding	42	24	22.75
Milking	70	18	113.49
Total	169	87	176.63

4.2.3 Forestry and Horticulture

Activities included under this category comprise two sub-groups. Under forestry related activities are included chopping or sawing of wood, collection of timber, and fetching of fodder, firewood, leaf litter, and other forest products. Horticulture related activities include the preparation of beds for horticulture plants, weeding, irrigation of orchards, and the harvesting of fruits. All travels undertaken for these activities are included as well.

Table 4: Average time spent on forestry & horticulture activities

Activities	Time	N	Std. Deviation
Chopping/sawing of wood	356	6	115.86
Harvesting fruits	195	3	68.74
Weeding orchard	78	2	102.53
Digging orchard	459	4	83.30
Fetching fodder	98	4	75.00
Fetching firewood	118	17	117.30
Fetching leaf litters/other forest products	230	2	56.57
Total	202	39	159.12

39 respondents (13.5% of the sample population) spent an average time of 202 minutes on activities related to forestry and horticulture. Fetching firewood was the most common activity under this category. Four respondents were involved in digging of orchard and it has the highest mean time of 459 minutes. Other activities which took fairly long duration were chopping or sawing of wood and fetching leaf litters and other forest products.

4.2.4 Craft related activities

Painting, knitting, spinning wool or yarn, dyeing wool/yarns, making yarn rolls, setting up looms, weaving, making bamboo baskets, making ropes, carpentry**,** blacksmithing and all travel related to these activities are included in this category.

A total of 53 respondents (18% of the sample population) reported that they engaged in some craft related activities during the day preceding the interview. The collective mean time for these activities was 342 minutes. Weaving constituted the most common craft-related activity. 40 respondents (14% of the sample population) reported weaving during the day before the interview and spent 359 minutes on it (close to six hours).

Table 5: Average time spent on craft-related activities

Activities	Time	N	Std. Deviation
Bamboo crafts	210	6	169.12
Weaving	323	4	137.20
Activities associated to weaving	105	6	31.46
Other crafts	359	40	176.68
Total	342	53	186.09

4.2.5 Construction and repairs

This category comprises of activities such as the construction of a new house, animal sheds, and toilets, minor or major repair of dwellings, and *woola* activities- construction and repair of public infrastructure such as bridges, schools, health clinics, drinking water supply scheme, mule tracks, roads, temples, offices of community leaders, etc.

13 respondents (5% of sample population) were involved in construction and repair activities.

Woola activities- construction of a school and erection of a gate (to celebrate appointment of a lama) constituted the activities under this category. Both of these activities took over 540 minutes (more than 9 hours). Repair works lasted over four hours (245 minutes).

Table 6: Average time spent on construction and repair activities

Activities	Time	N	Std. Deviation
Preparing place for celebration	545	3	67.64
Construction of school	562	6	53.07
Other construction/repairs	245	4	120.21
Total	460	13	167.13

4.2.6 Household Maintenance

Household maintenance activities include cooking, setting up and serving meals, washing dishes, cleaning the inside and outside of the house, making fire, fetching water, and laundry related activities (washing, drying and folding clothes). Also included under this category are shopping, packing and arranging household stuffs, and travel related to the above activities.

218 respondents (75% of the sample size) were involved in some activities related to household maintenance on the day preceding the interview. Average time spent on these activities was 200 minutes. Cooking was the most common activity reported; 175 respondents said that they cooked during the previous day and spent on average 104 minutes on it.

Table 7: Average time spent on household maintenance

Activities	Time	N	Std. Deviation
Cooking	104	178	76.97
Dish washing	47	47	36.78
Cleaning house (outside)	165	4	126.10
Cleaning house (inside)	49	44	38.75
Laundry	93	32	101.99

Fetching water	28	10	13.59
Unspecified chores	129	82	154.43
Shopping	216	28	198.15
Total	200	218	172.22

4.2.7 Processing of food and drinks

This category consists of activities such as grading or sorting of grains, drying grains, pounding of paddy, grinding maize, milling paddy or maize, churning milk, brewing alcohol, and travels undertaken for these activities.

17 respondents (6% of the sample population) reported involvement in processing of some food and drinks. They spent an average time of 126 minutes on these activities. Brewing of alcohol consumed the longest time (158 minutes).

Table 8: Average time spent on processing of food and drinks

Activities	Time	N	Std. Deviation
Brewing *ara* (alcohol)	158	6	76.40
Churning milk	53	4	15.00
Pounding rice	150	2	169.71
Grinding maize	150	2	127.28
Milling maize/paddy	130	3	45.83
Total	126	17	82.53

4.2.8 Business, Trade and Services

This category includes activities such as selling vegetables, fruits, and other farm products; selling livestock products such as butter, cheese and meat; selling food and drinks; tending to shop; activities of officials of government and private organizations (office work); driving and ferrying people; and travels related to them.

Table 9: Average time spent on business, trade and services

Activities	Time	N	Std. Deviation
Office work	428	30	135.49

Driving taxi	525	2	106.07
Selling vegetables	323	2	265.17
Tending shop	431	5	185.35

38 respondents (13% of the sample population) were involved in certain activities under this category. Office workers- both government and private, which constitute the chunk of respondents in this category of activities, spent 428 minutes on their work during the day before the interview.

4.2.9 Care of children & sick household members

Included in this category are activities such as feeding children, bathing and dressing children, looking after children, putting children to sleep, accompanying them to playgrounds and parks, transporting children to and from schools, supervising or helping children with their homework, and teaching children. Various forms of help provided to sick or old members of the households are other activities that constitute this category. All travels associated with these activities are included as well.

60 respondents (21 % of the sample population) reported involvement in care-related activities, a bulk of which was childcare. 57 respondents reported involvement in childcare activities and three respondents reported involvement in caring of sick members of the household. The average time spent on childcare was 137 minutes, while for care of sick members of the household it was 398 minutes. Of the childcare activities, most of the respondents reported involvement in looking after children, bathing, transporting children to and from school, and playing with children. Table 10 shows the number of respondents involved in various childcare related activities and time spent on them.

Table 10: Average time spent on care of children and sick household members

Activities	Time	N	Std. Deviation
Feeding child	50	6	25.30
Bathing	54	11	21.11
Dressing children	15	4	10.80
Looking after children	244	16	244.35
Drop & pick up from	28	11	14.38

school			
Teaching children	70	8	33.81
Playing with children	62	6	39.33
Others care activities	78	10	91.42
Total childcare	137	55	176.91
Care of sick	398	5	294.67
Total	158	60	195.99

4.2.10 Personal Care

Personal care comprises activities such as sleeping, eating and drinking, washing, dressing, napping, sick in bed and medical care of self, looking for job for oneself, rest and relaxation, and all travels related to them.

Since this category comprises of biologically necessary activities such as sleeping and eating, the rate of participation is 100%. Overall average time spent on personal care was 680 minutes (over 11 hours). The main reason for high amount of time spent on personal care is due to inclusion of sleep in this category. The mean sleep time for respondents was 513 minutes (8 hours 33 minutes), which accounts for 36% of a person's total time. Eating and drinking, consumed 106 minutes and accounts for 7% of respondents' total time. Next activity that consumed significant amount of respondents' time was resting, which had an average duration of 105 minutes.

Table 11: Average time spent on activities related to personal care

Activities	Time	N	Std. Deviation
Eating	106	289	39.65
Rest/relaxing	105	95	77.64
Sleeping	513	289	89.09
Washing	24	287	40.81
Other cares	23	40	19.29
Total	680	289	118.38

4.2.11 Education and learning

This category includes time devoted to both activities of formal and informal learning. Attendance of class, doing homework, reading and studying for the class (either at home or school), attendance of non-formal education (NFE) class, group work and discussions, and informal education such as oral narration of information are included. All travels done for these activities are recorded as well.

Only 19 respondents (7% of the sample population) reported participating in activities related to education and learning during the previous day. The survey found that on average participants spent 319 minutes on activities related to education, the longest of which was spent on attending classes (311 minutes). Private studies, attending non-formal education class, and doing homework were some other activities under this category that have a fairly long mean time.

Table 12: Average time spent on activities related to education and learning

Activities	Time	N	Std. Deviation
Attend NFE class	180	2	84.85
Attend Class	311	7	120.43
Homework	140	4	86.02
Group work	57	3	30.55
Co-curricular activities	105	2	21.21
Oral narration	88	2	38.89
Travel to school	42	7	22.70
Private study	183	12	123.63
Total	319	19	235.27

4.2.12 Community Participation

Community participation includes participation in community meetings, briefings by government officials on various issues, political activities such as voting, voluntary work and informal help provided to neighbors and other households in the community. Travels undertaken for these activities are included too.

20 respondents (7% of the sample population) were involved in some community-related activities. The most prominent activity was participating in meetings. Participants spent an average time of 271 minutes (over four and half hours) attending meetings. Three respondents

who participated in voluntary activities spent an average time of 202 minutes on them.

Table 13: Average time spent on activities related to community participation

Activities	Time	N	Std. Deviation
Meeting	271	18	206.81
Voluntary & community organized work	202	3	247.20
Total	274	20	205.09

4.2.13 Social and Cultural Activities

Social and cultural activities include socializing with members of the family, relatives, friends and neighbors, attendance of *tsechus*, festivals, religious ceremonies of neighbors, community religious ceremonies, cultural shows, and the spectatorship of sports activities. It also includes going to see a new born and celebrating *losar (New Year)* with families, friends and neighbors, attending funeral ceremonies, and time spent traveling for these activities.

115 respondents (40% of the sample population) reported engaging in some form of social and cultural activities. They spent an average of 174 minutes on these activities. The most common activity under this category was socializing with family members. 66 respondents reported socializing with their family and spent an average time of 101 minutes on it. Maximum time (258 minutes) was spent on cultural activities such as dancing, watching archery and other sports events, followed by socializing with neighbours (244 minutes).

Table 14: Average time spent on social and cultural activities

Activities	Time	N	Std. Deviation
Participate in cultural activities	258	13	125.82
Socialize with family	101	66	85.02
Socialize with friends	146	37	129.68
Socialize with neighbors	244	13	195.98
Socialize with relatives	146	10	162.41

Total	174	115	146.55

4.2.14 Religious Activities

Religious activities consist of reciting prayers and mantras, offering water and incense to the altar, lighting butter lamps, burning incense outside the house, conducting or organizing rituals, meditation, prostrations, and hoisting prayer flags. Other activities such as attendance of religious teachings, pilgrimages to religious sites or lamas within and outside the community, and circumambulation of *chortens* or *lhakhangs* are included in this category. All travels related to these activities are also included.

141 respondents (49 % of the sample population) reported participating in some religious activities during the day preceding the interview. Average time spent on these activities was 112 minutes. Offering of water, incense and food to the altar was the most common activity under this category. Participants spent an average time of 31 minutes on these activities. The next common religious activity was reciting prayers, on which participants spent an average time of 150. Attending religious teachings and conducting rituals were the activities that lasted longest- 318 minutes.

Table 15: Average time spent on religious activities

Activities	**Time**	**N**	**Std. Deviation**
Circumambulation	180	3	234.31
Offering	31	104	38.58
Conducting rituals/attending teachings	318	9	312.53
Praying	150	59	195.25
Prostration	71	4	44.79
Total	112	141	196.46

4.2.15 Sports, leisure, & mass media use

The sports and leisure category includes both active and passive leisure activities. Active leisure comprises activities that require physical exertion such as playing archery, *khuru*, tennis, *taekwon- do,* snooker, and going for a walk. Passive leisure include activities such as watching

TV and video, listening to radio and music, reading books, telephonic conversations, writing diaries, and playing cards. Hobbies such as playing guitar and other musical instruments are included here. Travels related to these activities are also included.

127 respondents (44% of the sample population) reported engaging in some sports and leisure activities during the day before the interview. The combined average time for these activities was 215 minutes. More (117) respondents were involved in passive leisure than in active leisure (32). Also, the average time spent on passive leisure was much higher than that spent on active leisure. Walking was the most common form of active sports and leisure. Participant respondents spent an average of 79 minutes walking during the day preceding the interview. Within the passive category, watching TV was the most common form of leisure activity. 84 respondents reported watching TV and spent an average time of 175 minutes.

Table 16: Average time spent on sports, leisure and mass media use

Activities	**Time**	**N**	**Std. Deviation**
Yoga	85	2	49.50
Archery	446	4	184.27
Basketball	128	2	31.82
Walking	79	19	45.00
Tennis	248	2	10.61
Other sports	152	3	46.46
Total active sports	145	32	141.62
Using computer for games (surfing/computer games)	73	5	38.01
Free time	188	24	128.41
Playing cards	75	2	21.21
Writing diary	43	2	24.75
Listen to music	69	7	52.79
Listen to radio	96	14	60.35
Read books	98	11	77.60
Watch TV	175	85	118.51
Total passive sports	196	117	123.41
Total	215	127	138.36

4.2.16 Residual Activities

Two categories of activities- visiting public offices and quarrying work had very few participants although amount of time spent on them was quite significant. So, they have been lumped together as residual activities.

i. Visit to public offices and functionaries

This sub-category includes visiting public offices and functionaries such as: the *gup*'s office to pay tax, obtain permits for firewood and timber or resolve disputes; the court to settle disputes; and the *tshogpa*'s house for his/her views on certain matters. People living in rural areas are often required to undertake such trips. Eight respondents reported undertaking such trips. Visits to court consumed 503 minutes (over eight hours) and visits to the *gup*'s office took 231 minutes.

ii. Quarrying Activities

This category consists of the collection of sand and gravel, and digging out stone slabs and boulders, as well as travels related to these activities. Only two respondents reported involvement in these activities but nevertheless, the amount of time spent on these activities was very long.

Table 17: Average time spent on visiting public offices/officials and quarrying work

Activities	Time	N	Std. Deviation
Quarrying work	590	2	14.14
Visit court	503	2	74.25
Visit *gup*'s office/other village functionaries	208	6	160.12

In both visiting public officials and quarrying-related activities, the number of participants is quite small. Small representation of these activities does not mean they are not common. The small number of instances of these activities recorded by the survey possibly could be due to its small sample size.

4.3. Total hours of work

Analysis so far has been confined to specific activities and time spent on them by the participant respondents. Since they were seen or analyzed as a specific activity which had multiple participants that spent varying amounts of time, we do not yet get a picture of the total time an individual spent on work and other activities during the day. In order to do so, we categorize the activities into work and non-work activities and calculate the average time spent on them by the entire sample population. The sum of these averages give total time spent on work and non-work activities.

Table 18: Average time spent on work & non-work activities by the sample population

Activities	**Time**	**Std. Deviation**
Crop farming & kitchen gardening	68	163.84
Livestock	51	123.76
Forestry & horticulture	27	90.06
Craft related activities	63	154.44
Construction and repairs	21	101.49
Household maintenance	150	172.55
Processing of food and drinks	7	32.59
Business, trade and services	58	158.19
Quarrying work	4	49.00
Care	33	109.42
Visit to public offices & functionaries	8	53.47
Total work hours	**489**	**248.50**
Personal care	680	118.05
Education & learning	21	98.59
Community participation	19	87.29
Social and cultural activities	71	126.20
Religious activities	55	148.32
Sports, leisure & mass media use	96	142.54
Total non-work	**942**	**251.69**

Total	1430	16.96
Unaccounted time	10	16.96

We note above that, except for personal care, for which number of participants has not changed, the average amount of time spent on activities is much smaller than when we analyzed specific activities in the preceding section. Now the amount of time spent on activities is distributed across the entire sample population. Overall time spent on work activities is 489 minutes and that for non-work activities is 941 minutes. This substantial amount of difference between time spent on work and non-work activities is, as mentioned earlier, due to inclusion of sleep in personal care, which is a non-work activity. Sleep constitutes the biggest chunk of non-work activities.

Part Five: Differences in Patterns of Time Use

5.1 Differences in time use between genders

In developing economies such as Bhutan, where population is dependent largely on agriculture, men and women often engage in different activities. Such division is often determined by social norms and the type of skills required, such as the amount of physical assertion involved in a particular activity. It is common to see activities that are exclusively carried out by one gender and, in activities where both are involved, the degree or intensity of involvement often differs. This section looks at such differences in all categories of activities in which respondents participated. We begin with total hours of work.

We observe that burden of work is significantly higher for women than that for men. Women worked 536 minutes (close to nine hours) whereas men worked 437 minutes (over seven hours). Obviously, time spent on non-work activities by women is less (877 minutes) as compared to men (973 minutes). As the data clearly shows, the cushion for this excessive amount of time that women spent on work came from reductions in non-work activities. In the following section, we will find out where the differences are most stark (both for work and non-work).

Table 19: Average time spent on work and non-work activities by gender

Activities	**Male**	**Female**
Work activities	437	536

Non-work activities	973	877

Moving on to explore gender differences in specific activities, we begin with crop farming and kitchen gardening. We note a few activities in which only either men or women were involved. In applying manure, weeding, transporting, and threshing only women were involved, whereas in plowing, clearing fields and other unspecified agriculture activities, only men were involved. Although numbers are very small, they nevertheless suggest that men were mostly engaged in activities that were physically demanding such as plowing, clearing fields and digging, and that women were mostly involved in activities that were physically less demanding such as weeding, threshing, and applying manure. We observe that in activities where both men and women were involved, women spent longer time than men but once again the number of participants is very small for any definite conclusions to be made. On average, men spent 372 minutes and women 353 minutes per day on activities related to crop farming and kitchen gardening. The data shows that men spent more time at crop farming and kitchen gardening which are physically demanding activities.

Table 20: Average time spent on crop farming and gardening by gender

Activities	Male	Female				
	N	SD	Time	N	SD	
Applying manure				523	2	45.96
Digging farm	366	7	123.65	450	2	127.28
Kitchen gardening	124	4	67.50	210	5	130.77
Harvesting	395	3	329.43	429	4	184.23
Plowing	236	4	184.27			
Threshing				120	2	84.85
Transportin g				135	2	21.21
Weeding				90	2	42.43
Clearing fields and other agriculture	323	4	226.33			

work						
Total	372	29	201.06	353	25	188.72

In the case of livestock related activities, except in herding and feeding, in which men spent an average of 244 minutes (over four hours) and 67 minutes respectively, women spent longer time in rest of the activities. Overall, women spent 175 minutes whereas men spent only 161 minutes.

Table 21: Average time spent in livestock related activities by gender

Activities	Male	Female				
	N	SD	Time	N	SD	
Putting animals to sheds and other animal care	74	6	51.42	113	7	120.83
Feed preparation	53	5	21.68	77	13	133.87
Feeding animals	67	27	86.94	58	28	42.47
Herding	244	16	222.77	191	20	182.49
Milking	36	10	22.58	47	14	22.58
Total	161	42	192.58	175	45	162.25

The data reveals some distinct gender differences in forestry and horticulture activities. Women were exclusively engaged in harvesting fruits, weeding the orchard, and fetching of leaf litters and other forest products, whereas men were engaged in chopping or sawing wood. This division of work is, as in crop farming and gardening, based on the nature of work, particularly the amount of physical exertion involved. In digging orchards and fetching fodder and firewood, both men and women were involved. Women spent much more time (139 minutes) fetching firewood than men (99 minutes). We also observe differences in time spent on digging orchard and fetching fodder but the number of participants is too small to draw any definite conclusions.

Table 22: Average time spent on activities related to forestry and horticulture by gender

Activities	Male	Female			
	N	SD	Time	N	SD

Chopping or sawing wood	356	6	115.86			
Harvesting fruits				195	3	68.74
Weeding orchard				78	2	102.53
Digging orchard	492	3	62.52	360	1	.
Fetching fodder	60	2	0.00	135	2	106.07
Fetching firewood	99	9	90.91	139	8	145.15
Fetching leaf litter & other forest products				230	2	56.57
Total	229	21	182.74	170	18	123.78

Likewise in the case of craft-related activities, the data reveals distinct gender differences. Women were involved mostly in weaving and associated activities, whereas men were involved in other crafts such as carpentry, painting and blacksmithing. In activities where both men and women were involved, women spent much more time than men. For instance, women spent 313 minutes on bamboo craft works whereas men spent only 107 minutes. All together men spent 249 minutes on craft related activities while women spent 361 minutes.

Table 23: Average time spent on craft-related activities

Activities	Male	Female				
	N	SD	Time	N	SD	
Bamboo crafts	107	3	56.86	313	3	190.35
Weaving				359	40	176.68
Activities associated with	90	1		108	5	34.21

weaving						
Other crafts	323	4	137.20			
Total	249	9	178.64	361	44	183.71

There was a substantial difference between men and women in time spent on household maintenance. Overall women spent 219 minutes on household maintenance whereas men spent only 165 minutes. More specifically, the time women spent on cooking, dishwashing, laundry, and shopping far exceeded that of men. Men, on the other hand, spent more time cleaning houses (both inside and outside). Thus, while household maintenance was predominantly that of women's responsibilities, men too played their roles.

Table 24: Average time spent on household maintenance by gender

Activities	Male	Female				
	N	SD	Time	N	SD	
Cooking	83	55	105.47	113	123	58.16
Dish washing	39	10	20.25	50	37	40.02
Cleaning house (outside)	225	2	148.49	105	2	106.07
Cleaning house (inside)	54	8	28.38	48	36	40.96
Laundry	57	7	33.52	103	25	112.57
Fetching water	26	4	7.50	28	6.00	17.22
Unspecified chores	169	31	213.11	106	51	99.25
Shopping	150	11	164.32	258	17	211.08
Total	165	80	187.32	219	138	160.18

Like in household maintenance, food processing activities were over-represented by women. Women's time in food processing averaged almost twice that of men's in most of the activities. Table 25 shows the time spent on food processing activities.

Table 25: Time spent on food processing per person by gender

Activities	Male	Female				
	N	SD	Time	N	SD	
Brewing *ara* (alcohol)	90	1	.	171	5	77.01
Churning milk	45	2	21.21	60	2	0.00
Pounding rice				150	2	169.71
Grinding maize	60	1	.	240	1	.
Milling maize/paddy	90	1	.	150	2	42.43
Total	66	5	25.10	151	12	85.71

In childcare and care of old and sick members of the family, women spent 164 minutes while men spent 146 minutes. The data shows that no men were involved in the feeding of children, in which women spent an average time of 50 minutes. Men were involved in other childcare related activities. They spent more time than women teaching and supervising children (73 minutes). In all other areas of childcare, women spent more time than men. Overall, women spent more than twice as much time (168 minutes) on childcare than men (74 minutes).

Table 26: Average time spent on care of children and sick people by gender

Activities	Male	Female				
	N	SD	Time	N	SD	
Feeding child				50	6	25.30
Bathing	60	1	.	53	10	22.14
Dressing	30	1	.	10	3	5.00
Looking after children	150	2	127.28	258	14	257.06

Drop to & pick up from school	28	6	11.29	28	5	18.91
Teaching children	73	6	39.33	60	2	0.00
Playing with children	44	4	18.87	98	2	53.03
Other childcare activities	57	3	5.77	86	7	110.52
Total childcare	74	18	62.09	168	37	205.37
Care of sick	603	3	121.07	90	2	42.43
Total care	146	21	190.35	164	39	201.12

Of the small number of participants involved in care of the sick, the time spent by men was much more than that spent by women. Men spent 603 minutes as opposed to 90 minutes by women. The dominance of women in childcare is expected for biological reasons, but men's dominance in the care of sick people is quite unexpected. Intuitively, one would expect women to spend more time caring for the sick as well. Closer analysis of the respondents involved showed that care of the sick involved taking the sick relatives to hospitals far away from their residence, and it can be surmised that men were deemed appropriate to accompany the sick so that they could better handle circumstances in case of any mishaps.

Moving on to activities related to personal care, we see no glaring differences between men and women in terms of their time spent on them. Except in the case of rest, men's average time in all activities related to personal care exceeded that of women's. On the whole men spent 697 minutes on activities related to personal care during the day preceding the interview while women spent 665 minutes. The greater length of time that women spent at work was compensated for by a reduction in personal care, mainly in terms of reduced hours of sleeping. Table 27 displays time spent on various activities related to personal care.

Table 27: Average time spent on personal care by gender

Activities	Male	Female

	N	SD	Time	N	SD	
Eating	107	137	39.24	105	152	40.11
Rest/relaxing	99	54	66.01	112	41	91.03
Sleeping	522	137	92.96	505	152	84.99
Washing	24	136	25.50	23	151	50.89
Other cares	29	25	20.31	14	15	13.39
Total	697	137	121.91	665	152	113.34

Turning to activities related to sports, leisure and use of mass media, we find significant differences between men and women in time allocated to these activities. In both active and passive sports and leisure, men spent more time than women. The lesser amount of time that women spent in sports and leisure was another source of cushion for their greater time devoted to work-related activities.

In passive sports and leisure, women spent much more time (198 minutes) watching television than men (146 minutes). Men reported having 196 minutes of free time as opposed to 156 for that of women. Men also spent more time reading and listening to the radio than their female counterparts.

Table 28: Average time spent on active sports and leisure by gender

Activities	Male	Female				
	N	SD	Time	N	SD	
Yoga	120	1	.	50	1	.
Other sports	152	3	46.46			
Archery	446	4	184.27			
Basketball	105	1	.	150	1	.
Walk	101	7	48.00	66	12	39.59
Tennis	248	2	10.61			
Total active sports	204	18	164.21	71	14	43.18
Using computer for games (surfing/computer games)	70	3	45.83	78	2	38.89
Free time	196	19	119.05	156	5	171.55
Playing	90	1	.	60	1	.

cards						
Writing dairy	25	1	.	60	1	.
Listening to music	77	5	58.91	50	2	42.43
Listen to radio	105	11	63.78	60	3	30.00
Read books	109	8	86.80	70	3	45.83
Watched TV	146	37	89.92	198	48	133.10

Total passive sports□201 □59□116.01 □190 □58□131.30 □□Total□234 □65□138.63 □194 □62□136.12 □□

In social and cultural activities, time spent by women (186 minutes) in socializing with friends is much longer than that of men's (109 minutes). Time spent socializing with relatives by women is much more (220 minutes) than that spent by men (114 minutes). The amount of time spent by women on cultural activities is also higher than that of men. Overall, time spent on social and cultural activities by women (214 minutes) is substantially higher than that spent by men (140 minutes).

In the case of community participation, not much difference was observed between men and women in time spent on attending meetings. Men spent 299 minutes while women reported spending 248 minutes participating in meetings during the day preceding the interview.

Table 29: Average time spent on social and cultural activities by gender

Activities	Male	Female				
	N	SD	Time	N	SD	
Participate in cultural activities	200	6	111.71	309	7	122.12
Socialize with family	96	36	59.15	106	30	109.19
Socialize with friends	109	19	104.50	186	18	144.51
Socialize with	244	4	243.22	244	9	188.22

neighbors						
Socialize with relatives	114	7	70.38	220	3	303.48
Total	140	61	116.18	214	54	167.18

Time spent on religious activities by men is twice more than that spent by women. This significant difference stems largely from the longer amount of time men spent praying and attending teachings and blessings.

Table 30: Average time spent on religious activities by gender

Activities	Male	Female				
	N	SD	Time	N	SD	
Circumambulation				180	3	234.31
Making offerings to altar	30	42	44.72	32	62	34.17
Praying	168	39	211.25	115	20	158.53
Prostration	60	1	.	75	3	54.08
Other religious activities (attending teachings)	387	5	241.03	231	4	406.25

No significant difference between men and women were observed in construction and repair activities. We do not observe any significant difference between men and women in business, trade and services as well. A very small number of people reported engagement in educational activities and of those involved, it was found that females spent longer time than male respondents.

5.2 *Difference in time use by age groups*

Skills and strengths that one commands play an important role in determining what one does.

The skills and strengths in turn vary by one's age. For instance, participation in active sports or strenuous farm work will vary substantially by one's age. Respondents are grouped into five age groups (below 15, 16-30, 31-45, 45-60, and above 60) to see if the activities they engaged in and the amount of time devoted to them vary by age.

Figure 1: Average time spent on work and non-work by age groups

We observe that respondents in the age group of 31-45 years, i.e. people who were in their prime working age, worked the longest (537 minutes). The shortest duration of work is recorded for respondents in the age category of above 60 years. Reverse holds true for non-work activities; people above 60 spend longer time at non-work than rest of the respondents.

Moving on to specific activities, we observe that the highest mean time farming and kitchen gardening was for respondents in the age range of 31-45 years and in livestock for 46-60 years. We also observe that number of respondents above 60 years involved in livestock-related activities is higher than in farming and kitchen gardening. This indicates that while elderly people may not be participating in activities that are physically demanding, they continue to contribute to the household economy by taking part in other activities such as livestock herding.

Table 31: Average time spent on major work activities by age groups

Activities	Below 15	16-30	31-45	46-60	Above 60
Crop farming & kitchen gardening		350	412	298	354
Livestock		116	151	222	172
Forestry & horticulture	30	228	234	164	163
Craft-related activities	620	355	356	263	130
Construction & repairs		540	418	365	573
Household maintenance		221	194	202	145
Food		114	131	90	175

processing					
Business, trade & services		449	460	418	135
Care of children & sick		121	138	247	318

The above pattern, i.e. average time being longest for respondents in the age range of 31-45 holds true for other work-related activities as well. On average, respondents in this age category spent 234 minutes on forestry and horticulture related activities. For craft related activities, respondents below 15 years and 16-45 years spent the longest time.

The data shows that the frequency of respondent involved in childcare were mostly those in their reproductive ages- 16 through 45. However, we also observe that time spent on childcare is much longer for respondents in late stage of their reproductive age or those that are already in their post-reproductive years. Upon closer analysis it was found that these respondents were elderly women who spent long hours watching their grandchildren. In Bhutan, family networks are still very vibrant and it is customary for elderly women and men to look after their grandchildren.

In personal care, we observe that respondents below the age of 15 years slept the longest whereas shortest one was noted for those respondents in the age category of 46-60. Respondents in the age category of 16-30 and above 60 years enjoyed more rest than others. Type of rests, however were different in these two age groups; rest in the former age category referred to resting during or between work whereas that for later referred to general relaxation and rest on the whole. These findings indicate that as work hours decline with age, time spent on rest and other personal care rises.

Figure 2: Time spent on sleep and rest by age group

We observe that time spent on religious activities by older people was more than that spent by younger respondents. The data reveals a very strong association between the age and amount of time devoted to religious activities. Respondents above 60 years spent 249 minutes on various forms of religious activities during the day preceding the interview. The amount of time a person

devotes to work drops as one ages allowing one to devote more time to his/her spiritual needs.

In socio-cultural activities, the amount of time spent peaked for those in the age group of 46-60 years. For those below 15, no participation in socio-cultural and religious activities was observed at all. Absence of participation by young in socio-cultural activities is possibly because they do not yet participate actively in work through which much social participation is generated. Respondents in the age group of 46-60 dominated the time spent on community participation as well. While further research would be required to substantiate this, for the moment it could be said that in Bhutan age is often associated with wisdom and experience and whenever there are meetings that requires lot of discussions and exchange of views, families prefer elderly member of their households to attend.

Figure 3: Time spent on religious, socio-cultural & community participation by age group

Another activity where age pattern was distinctly observed was education. The data shows that most respondents who were involved in education and learning were groups of below 15 and 16-30. Those respondent in the younger age group, i.e. below 15 years spent much more time than respondents in other age groups.

Figure 4: Time spent on education & learning by age

Age patterns become even more distinct in sports and leisure activities. Respondents in the age range of 16-30 spent more time participating in sports and leisure. As we have seen earlier, respondents in age ranges of 31-45, i.e. those in their prime working age, spent more time at work and therefore could not have been possible for them to allocate as much time for sports and leisure.

Figure 5: Time spent on sports and leisure by age groups

5.6 Difference in time use by regions

What one does is often decided by where one is located or based. For instance, in areas where farming is a predominant activity (due to favorable climatic factor) or absence of alternative

activities, it is likely for people of such areas to spend long hours working on their farm as compared to people of other areas. This section looks at the difference in pattern of activities and time spent on them between respondents residing in urban and rural areas.

Table 32: Total hours of work by area of residence and gender

	Male	Female				
Region	Time	N	Std. Deviation	Time	N	Std. Deviation
Urban	370	37	249.8	454	44	234.55
Rural	461	100	257.38	569	108	221.95

For both men and women, burden of work is much more for the residents of rural areas.
The above data shows that residents in rural areas on average worked more by one hour as compared to their urban counterparts. The difference in burden of work between women of the two regions is more than that between men. Women in rural areas had the longest hours of work.

Moving on to specific activities, we find that that activities related to farming and kitchen gardening, livestock, forestry and horticulture, construction and repairs, quarrying, and visiting government officials were all concentrated in rural areas. There were only two instances of urban residents' participation in some horticultural activities.

Respondents from both rural and urban areas were involved in craft-related activities. Respondents from rural areas dominated craft work both in terms of rate of participation as well as in terms of amount of time spent these activities. Rural residents spent 50 minutes more on these activities than their urban counterparts.

Table 33: Time spent on craft related activities by region

Activities	Urban	Rural		
	N	Mean	N	
Bamboo craft			210	6
Weaving	312	13	382	27
Activities related to weaving	60	1	114	5
Others (painting, blacksmithing,	390	1	300	3

carpentry)				
Total	306	15	356	38

As noted earlier, information on travel could not be discerned for independent analysis and have been lumped with the activity for which they were undertaken. Differences were also observed in time spent on childcare. Both urban men and women spent less time than their rural counterparts on childcare although the difference isn't that significant.

Table 35: Average time spent on household maintenance & other activities by region

	Urban	Rural				
Activities	N	Std. Deviation	Mean	N	Std. Deviation	
Household maintenance	179	59	138	207	159	183
Childcare	122	31	178	157	24	177
Active sports	103	24	62	274	8	226
Passive sports	199	67	127	192	50	119
Community participation	135	2	64	289	18	210
Social & cultural activities	137	37	119	192	78	156
Religious activities	59	42	112	134	99	220

No significant differences between urban and rural residents were observed in personal care. Some variations were observed in time spent on sports and leisure activities by rural and urban residents. More people in urban areas pursued active sports or leisure whereas respondents in rural areas were mostly confined to passive ones. However, time spent on active sports by rural residents is much higher than that by urban residents. Urban residents also had more varied forms of sports and leisure activities; in rural areas, there were just a few forms of sports and leisure, dominant ones being free time, listening to radio and watching TV (in some pockets). We observe that amount of time spent on community participation by rural residents was much

higher than those in urban areas. Out of 20 respondents who reported participating in community activities, only two were from urban areas and the average time they spent on these activities was 135 minutes as opposed to 289 minutes for rural residents.

There were some differences in time spent on social and cultural activities between urban and rural respondents. Participation in cultural activities such as attending religious ceremonies, local festivals, neighbors' *choku* (annual religious ceremony) was more prominent among the rural respondents than the respondents living in urban areas. Socializing with friends was more common among the residents of urban areas than in rural areas. On the whole, time spent by rural residents on socializing was much more than those from urban areas. Rural residents also spent more time on religious activities than their urban counterparts.

5.7 Differences in patterns of time use by family structure

The type of family structure one belongs to could also influence how one allocates time significantly. For instance, studies have found that the presence of 'young children substantially reduces mother's sleep time' (Biddle & Hamermesh, 1990). This section looks into how household structure affects time use pattern of respondents. We begin with total hours of work.

Table 36: Average time spent on work activities by structure of family

Family Type	Mean	N	Std. Deviation
Single person	402	33	283.19
Couple with no children	376	19	249.32
Couple with children in household	526	180	231.39
Single-parent with children in household	570	21	197.67
Child (under 20) in two-parent	391	23	300.45
Child (under 20) in single-parent family	480	3	307.77
Others	363	9	197.82

We observe above that respondents with children had longer work hours than other types of

families. There was a substantial amount of difference in total hours of work between couples with and without children. Couples with children worked 150 minutes (two and half hours) more than couple without children. Increase in work hour brought about by presence of children is experienced more acutely by single parents with children. They had the longest work hour of 570 minutes.

Prompted by the above findings, similar analysis was carried out in all categories of activities. However, no meaningful association could be discerned in many of these activities; only in household maintenance, childcare, personal care, and sports and leisure were there some association between family structure and patterns of time use. Men with children in their house spent 125 minutes on household maintenance whereas those without children spent only 73 minutes and women with children in their household spent 217 minutes on household maintenance whereas those without children spent only 182 minutes. Extra hours of work that families with children were required to do would have resulted out of many childcare related activities such as cooking and doing laundry, etc.

Table 37: Average time spent on household maintenance & sleeping by men and women with & without children below six years

Children below 6 years in the household	Household maintenance	Sleeping		
	Female	Male	Female	
Yes	125	217	525	492
No	73	182	520	518

This increase in total work hour, which is caused by increased household maintenance, was compensated for by reduced hours of sleep and leisure. The data shows that respondents that had children below the age of six slept less than those without children. Females with children slept close to half hour less than those women who did not have children and men with children in their household slept about five minutes less than those without children.

Table 38: Average time spent on sports & leisure by family structure

Family Type	**Mean**	**N**	**Std. Deviation**
Single person	111	33	159.56
Couple with no children	99	19	125.93

Couple with children in household	93	180	145.88
Single-parent with children in household	50	21	94.55
Child (under 20) in two-parent	95	23	128.28
Child (under 20) in single-parent family	20	3	34.64
Other	223	9	148.18

Another source of cushion or adjustment for increased work hours came from reduced leisure time. Table 38 shows that the amount of time spent on sports and leisure is lowest for single parent with children in the household. Married couple with children spent relatively less amount of time on sports and leisure than couples without children. There is significant difference in time spent on sports and leisure between single parent with children and single person.

5.8 Difference in time use by employment status

One's employment status affects the way one allocates time to various activities. Obviously, total hours of work or burden of work is more for employed respondents than unemployed, retired, and respondents with other occupational status. Contrarily, unemployed or retired people may spend more time at non-work activities. Findings of the survey are consistent with these a priori expectations.

Table 39: Average time spent on work & non-work activities by employment status

	Work	Non-work				
	N	SD	Mean	N	SD	
Employed	532	194	226.47	898	194	228.06
Unemployed & looking for work	380	3	255.15	1060	3	255.15
Student	328	24	256.07	1099	24	265.92
Homemaker	507	46	231.45	925	46	237.04
Retired	321	5	254.91	1099	5	276.46
Others	233	15	289.94	1190	15	305.67

As expected we observe that highest amount of time at work was spent by respondents who were employed and highest amount of time to non-work was spent by unemployed, retired, students, and 'others'. It would be worthwhile to look at the details of the work and non-work activities. We observe that employed people spent more time on most of the activities under the work category and home makers at household maintenance. What is noteworthy, however, is that people with other types of employment status engaged in activities such as household maintenance and care of children.

Table 40: Average time spent on various work activities by employment status

Activities	Employed	Unemployed	Student	Homemaker	Retired	Others
Crop farming	87	70	10	35	54	0
Livestock	60	0	7	60	0	0
Forestry & horticulture	40		5	0	0	0
Craft-related activities	56		127	94	0	0
Quarry work	3	0	0	0	120	0
Construction	28		0	11	0	0
Care work	32		34	47	48	0
Household maintenance	145	165	124	227	99	62
Food processing	9	0	0	7	0	0
Visit to public offices	11	0	0	0	0	0
Business,	62	145	21	26	0	171

trade & services						
Total work hours	532	380	328	507	321	233
Education	3	0	172	0	12	86
Community participation	24	0	0	15	0	6
Personal care	680	840	688	666	567	696
Religion	33	30	12	61	343	262
Socio-cultural	79	73	68	48	42	51
Sports & leisure	79	117	160	135	135	88
Total non-work	898	1060	1099	925	1099	1190

In the above table we observe that students were involved in most of the work related activities. Provoked by this, time spent on work activities by students is analyzed in terms of region (rural or urban) and we observe that students in rural areas worked much longer than those in urban areas and the contrary holds true for sports and leisure. We observe that students in rural areas worked much longer than those in the urban areas.

Table 41: Average time spent on work and non-work activities by students, by region

Activities	**Rural**	**Urban**
Work Activities	452	204
Non-work activities	969	1229

While engagement of students in economic activities is interesting and noteworthy, I would like to caution the readers from making further conclusions. In some areas, the survey was carried out during winter vacation and their pattern of activities as reflected in the survey may not hold true for their normal academic cycle.

Part Six: Relationship between time use and happiness

Analysis so far has focused on patterns of time use and various factors that determine them. In doing so, we have been able to find the average amount of time allocated to all categories of activities. These findings present a good picture of the nature of economic and non-economic activities that are commonly pursued by Bhutanese. The findings also show how activities differ by age, gender, employment status, residential status, and the type of family one belongs to. This section looks at how the use of time in different areas of life interacts with subjective well-being or happiness of the respondents. Following the past studies on this topic, I discuss below how time spent on work, socialization, community participation, religious activities, and sports and leisure by the respondents relate to their reported level of happiness.

In order to analyze the relationship between indicators of time and happiness, I report below results on happiness, which was covered under index, viz. psychological well-being. Respondents were asked to report their level of happiness on the scale of 1 to 10, 1 being not a very happy person and 10 being a very happy person. Following table presents the reported level of happiness for the respondents:

Table 42: Mean happiness scores (points) for the sample population

Level of happiness	Frequency	Percent
1	2	0.69
2	1	0.35
3	10	3.46
4	11	3.81
5	52	17.99
6	46	15.92
7	39	13.49
8	47	16.26
9	33	11.42
10	48	16.61
Total	289	100

Mean level of happiness= 7.06 points, Median level happiness= 7.00 points; and
Mode happiness value= 5.00 points

We observe that most of the respondents were on average quite happy. Only 8.3% of the respondents scored below five points, which is apparently the mode value of the sample. Median is located at seven points and the mean happiness score is 7.06 points. The data shows that the

respondents were largely very happy people.

6.1 Total hours of work and reported level of happiness:

A brief review of studies that revealed strong association between time use and happiness was provided at the beginning of this report. These studies found that people who worked long hours were usually less happy or satisfied with their life in general compared to people who worked fewer hours. People who reported that they spent little time with their family or friends also reported low levels of subjective well-being. These studies have also shown that people with no work or short hours of work report low levels of happiness or subjective well-being.

The channels through which long duration of work affects well-being are stress and the related health problems that people suffer. Studies carried out in Japan revealed a positive correlation between long work hours and '*karoshi*' (a syndrome of cardiovascular attacks such as strokes, myocardial infarction or acute cardiac failure). Uehata (1991) studied over 200 *karoshi* victims and found that two-thirds of the victims had worked more than 60 hours a week and more than 50 hours overtime work per month prior to the attack.

The findings of the above study are confirmed by another study carried out by Sokojima and Kagamimori in 1998. Their study, which controlled for other factors that could cause *karoshi*, found significant increased risk of myocardial infarction in Japanese men when daily work hours were above 11. They also found that people who work few hours suffer a high risk of heart attack. For instance they found that work hours reduced due to unemployment significantly increased the risk of myocardial infarction.

The other channel through which long duration of work affects well-being is not being able to maintain a balance between work and other aspects of life such as spending time with family and friends, doing exercise and other activities that one enjoys. In the case of less work hours, apart from health problems mentioned above, people with no work or very short duration of work suffer from low self-esteem and are not as able to establish social ties.

The findings of this survey show relationships between duration of work and reported level of happiness that are in congruence with the findings of the above studies. We observe that respondents who worked long hours felt that they were under constant stress. These respondents were less happy than others. Out of 87 respondents who said that they felt under constant stress, 58 (67%) of them had worked more than 480 minutes (eight hours) during the previous day.

Similarly, of the 140 respondents who said they felt they did not spend enough time with family and friends, 96 (69%) worked more than 480 minutes or eight hours.

Table 43: Number respondents who felt stressed constantly by work hour category

Work hour category	Under constant stress	No time for fun any more
Less than 120 minutes	5	12
121-300 minutes	11	19
301-480 minutes	13	13
above 480 minutes	58	96
Total	87	140

Respondents who reported that they experienced constant stress and who felt that they did not have time for fun any more scored lower on the happiness scale than other respondents.

Table 44: Mean happiness scores for respondents who felt under constant stress and those who did not have enough time for family and friends vs. those who didn't feel so

	Yes	No
Under constant stress	7.05	7.07
Do not spend enough time with family /friends	7.04	7.09

A better pattern of relationship between total duration of work and reported level of happiness is discerned when they are represented graphically. In figure 6, the lowest reported level of happiness is observed for respondents with long duration of work, in this case observed in employed people and home makers, employment categories where work hours exceeded eight hours. Maximum happiness is observed for those (students and retired people in our case) who worked just over five hours. We observe that at 3:53 hours of work the level of happiness is just slightly higher than for the highest hours of work, indicating that below certain threshold hours of work, the reported level of happiness falls.

Figure 6: Relationship between hours of work and reported level of happiness

We also observe that respondents who were unemployed and looking for work scored quite high on the happiness ranking. This might lead readers to think that it is in contrast to the previous

studies which found that unemployed people were unhappy. A clarification is most fitting here. The unemployed respondents covered by the survey were people who just finished their studies and were waiting to find some jobs and not people who were previously working and were laid off or were in chronic unemployment problems.

We observed earlier that burden of work was more for women than that of men. We also observed that burden of work was more for rural respondents than their urban counterparts. By extension of the above findings, we should observe low level of happiness for female respondents and respondents who are from rural areas. Findings from the data support these studies. We observe that women reported low level of happiness as compared to men. Both men and women in urban areas reported higher level of happiness than their rural counterparts. Highest level of happiness was reported by urban men and the lowest one by rural women.

Figure 7: Mean happiness for respondents by region and gender

Similar findings should hold for all other variables- age category and family structure. We observed earlier that respondents in the age category of 31-45 had the longest hour of work and in the case of family structure, single parent with children in the household had the longest hours of work.

Table 45: Mean happiness and work time by age category

Age category	Mean happiness (points)	Mean work time (hour)
Below 15	7.00	7.48
16-30	7.04	7.21
31-45	6.95	8.57
46-60	7.32	8.38
Above 60	7.00	6.37

We observe that lowest mean happiness (6.95 points) is reported for those respondents in the age category of 31-45. Single parent with children in the household reported the longest duration of work and by the logic of findings thus far, lower mean happiness score should be observed for respondents with such type of family. The data reveals findings in congruence with the above logic; single parents with children in the household reported lowest level of happiness.

Figure 8: Mean happiness of respondents by structure of family

6.2 Socialization vs. reported level of happiness

Participation in social and cultural activities is "a resource which contributes to social cohesion and enables communities and societies to survive and grow". Social capital, which contributes to the well-being of the society, arises out of participation in informal social networks such as interactions with friends, colleagues or families, and participation in community events. Social networks that one develops through such interactions help one in times of adversities.

The importance of social network or social capital to one's well-being can be found in several recent research publications. European Quality of Life Survey (2005) found that subjective well-being declined significantly in population groups who could not count on social support compared to those who were socially integrated. The study also found that people with limited opportunities to contact friends suffered low subjective well-being.

Apart from instrumental support such networks provide during times of difficulties, they also provide intrinsic benefits. One always enjoys time with family and friends and being able to enjoy one's time is crucial to well-being or happiness. One study found that people with higher rate of social participation had a higher frequency of positive feelings, and that contacts with friends tended to increase positive feelings more than other contacts (Phillips, 1967).

The survey reveals finings that are in conjunction with above studies. Respondents who socialized during the previous day reported higher level of happiness than those who did not participate in any social and cultural activities. The mean happiness score for those who participated in some social and cultural activities was 7.25 points whereas it was 6.93 points for those who did not engage in any social and cultural activities.

Table 46: Average happiness score for respondents by status of socialization

Socialized during the previous day?	Mean	N	Std. Deviation
Yes	7.25	118	2.09
No	6.93	171	2.03

According to the study cited above, it would also mean that people with higher rate of participation (who spent more time socializing or socialized frequently), would report higher

level of happiness. As we see in table 46, the data does not show a clear pattern of relationship between frequency of socialization and reported level of happiness.

Table 47: Average happiness by frequency of socialization

Frequency	Socialized with		
	Friends	Relatives	
Few times per week	6.77	6.78	7.14
Few times per month	7.13	7.38	7.05
Once a month	6.85	6.90	7.33
Not in last month	7.67	7.27	6.91

In socialization with relatives, we observe that respondents who socialized more frequently reported higher level of happiness but in socialization with neighbors and friends, we observe that respondents with lower frequency of socialization or those who did not socialized during the previous month reported higher level of happiness. So, while the data supports the general idea that people who socialize report higher level of happiness than those who do not, it is not able to establish evidence as to whether people with higher rate of socialization report higher level of happiness too.

6.3 Community participation vs. happiness:

The European Quality of Life Survey (2005) found that doing voluntary work, engaging in political activity and supporting others with money or food influenced one's well-being. Participatory activities, such as volunteering, affect one's well-being through two channels- intrinsic and extrinsic (Stutzer and Meier, 2004). On the intrinsic front, people's well-being increases when they volunteer because they enjoy helping others irrespective of the outcome and they feel gratified when they see conditions of the recipient of their service improve. They experience feelings of self-determination and competence. These positive experiences improve their happiness. On the extrinsic front, people who volunteer receive similar help from others in the future. For many, volunteering also serves as a prerequisite to many activities of interest.

Similarly, participation in community meetings and political activities are seen to yield both intrinsic and extrinsic benefits that eventually affect the happiness of individuals. Intrinsically, through participation in such community meetings and events people experience self-worth and self-efficacy. Extrinsically, community participation in development activities and political events are expected to yield results that are balanced and sustainable.

The data reveals a finding that is in contrast with previous studies. We observe that respondents who participated in community activities reported lower happiness (6.13 points) than those who didn't (7.11).

Table 48: Mean happiness for respondents by status of community participation

Participated in community activities	Mean	N
No	7.11	270
Yes	6.37	19

What could be the reasons behind why Bhutanese dislike participation in meetings? More research would be required to find out the exact reasons but I would dare to state here that participation in such events distract people from doing their farm work. People see participation in such meetings as more of a burden than a privilege. Another possible reason could be low political consciousness among the Bhutanese population, especially the rural residents. People are yet to associate any kind of pride or meaning to time they are required to spend in participating in such meetings. Also, the number of people who participated in community activities is very small as compared to those who didn't and so a true picture would require more comprehensive data.

6.5 Sports and leisure vs. level of happiness

The role of sports and leisure in affecting the well-being of individuals has been widely studied. These studies have found sports and leisure, particularly the active ones, to have positive causal effects on the well-being of individuals. Schnohr et al. (2005) found people with sedentary leisure patterns to report high levels of stress, dissatisfaction and less psycho-social well-being. In their study of working Brazilian women, Ponde and Santana (2000) found that those with active leisure schedules in addition to their commitments to work, childcare and household maintenance, tended to test higher on routine measures of mental health than those without much or no involvements in leisure and sports. A study by Biddle and Mutrie (1997) found that exercise such as aerobics for 8 to 10 weeks, two to four times a week, increased happiness and reduced clinical depression and anxiety. Exercise and sports are effective through the release of endorphins, social interaction, and the experience of success and self-efficacy.

Leisure activities such as dance and music affect well-being by inducing positive moods and

social interaction. Cinema attendance has been found to have positive effects on happiness and negative effects on self-reported anxiety and depression (Uhrig, 2005). The type of visual stimulation that films provide provokes an emotive response holding therapeutic properties. "The collective and controlled experience of this emotive response promotes well-being generally." On the other hand, excessive engagement in leisure activities such as watching television have been found to affect well-being or happiness negatively. Frey et al. (2005) found that heavy television watchers experienced lower well-being than others. Many individuals lose control over their behavior and watch TV in excess. Such behavior leads individuals to regret when the opportunity cost of their time is high. Long hours of TV watching leads to higher anxiety and material aspirations, thereby lowering life satisfaction. Also, excessive watching of TV crowds out other activities, particularly relational activities, which matter significantly to one's well-being (Bruni and Stanca, 2005).

Supporting the general idea of a positive relationship between sports and leisure and happiness, the data reveals that respondents who engaged in sports reported higher levels of happiness than those who did not.

Table 49: Mean happiness of respondents by status of their involvement in sports

Engaged in sports or leisure activities?	Mean	N	Std. Deviation
Yes	7.23	128	1.88
No	6.92	161	2.18
Total	7.06	289	2.06

It is found that the mean reported level of happiness was higher for those who engaged in active sports and lowest for those who engaged in passive sports, although differences are not so significant. This, nevertheless, indicates that the causal effect of active sports on happiness is more than that of passive ones.

Table 50: Mean happiness for respondents who engaged in active & passive sports

Category of leisure Activities	Mean	N	SD
Active	7.70	10	1.77
Only Passive	7.09	95	1.91
Both active and	7.50	22	1.79

passive			

Part Seven: Summary and Conclusion

To sum up, we found that the total burden of work for women was more than that for men, largely due to a greater time commitment of women to household maintenance, childcare, and craft-related activities. We have noted distinct sex specificity to some activities; weaving and food processing were carried out exclusively by women. We also noted that men largely carried out activities that required more physical exertion while women engaged in activities that were less physically demanding. Men spent much more time at both passive and active sports and leisure. Men also slept longer than women and spent more time at other activities related to personal care.

We observed patterns of activity consistent with life-cycle variation in time use. Confirming an a priori expectation, work hours peaked for the respondents that were in their prime age ranges, 31-45. Participation in active sports and leisure diminished with age and other passive activities such as praying, resting and attending to one's personal needs rose with age. Hours devoted to education and learning peaked at younger ages, especially for those in prime ages for attending school or college. We observed a link or correlation between hours of work and stress and work-life balance.

It was also observed that patterns of time use differed between the rural and urban residents. Most of the activities such as agriculture, livestock, forestry and horticulture, quarrying, and visits to public offices, were confined to rural areas. Most of the business, trade and service related activities were confined to urban areas.

We also observe differences in time use between various types of family structures. Families with children had longer work hours, largely amounting from more household and childcare work associated with the presence of children. These families made up for the increased time spent on work by reducing time for leisure and sleep. In the case of difference in time use between various categories of employment, as expected we observed that employed people had longer hours of work and shorter time for leisure. In terms of the relationship between time use and happiness, we observe positive relations that are largely consistent with previous studies although they are not statistically significant.

In terms of the objectives set, the present study fulfils the first two: i) finding out the types and

amount of unpaid work and ii) differences in patterns of time use according to various demographic, economic and social characteristics. We saw that respondents spent 200 minutes on household maintenance was, 158 minutes on care of children and sick, and 271 minutes on community participation, including voluntary work. If we assign monetary value to these hours and calculate an aggregate figure for a year, the amount would constitute a significant percentage of GDP. As mentioned earlier, these activities affect well-being directly but are somehow excluded from the accounts that are used to measure our well-being. As for the second objective, the study presents a good picture of how age, gender, area of residence, employment and family structure determine allocation of time. The study fails on the third objective; it is not able to find a credible relationship between reported level of happiness and patterns of time use. However, it is not utterly useless; the signs of correlation are right and we get a sense of the relationship. The strength of correlation could improve if the sample size is increased and other shortcomings of data collection addressed. Although full of such caveats, the data still provides an insight into the affect of time use on reported level of happiness.

In addition to partial fulfillment of its objectives, the present study presents a wide array of information related to public policy issues. For instance it was found that rural people spend quite a substantial amount of time visiting the *gup's* office and other public functionaries for various reasons. This amounts to a waste of farmers' precious time since they are not able to work in their farms during such days. Such information could be very useful to our policy makers involved in planning rural roads and transport and communication facilities on the whole.

It was observed that very few people read during their leisure time although quite a number of respondents had a decent level of education. Instead, we saw that a significant number of people, including rural residents, spent large amounts of time watching TV. Since excessive watching of TV affects the well-being of individuals negatively and destroys healthy interactions between family members, policy makers might want to take this development seriously and think about designing policies that could encourage people to pursue active and productive leisure activities such as reading.

We also saw the exclusive role women play in processing food items for the household. This indicates an important role women play in providing and maintaining the food and nutrition to members of the family. Agencies concerned with improving the nutritional status of the population could take such information into account while formulating policies and designing programs related to nutrition. Important contributions women make toward production of other goods and services at home were also highlighted by the study. Women's role in home

production, particularly in producing handicraft products by engaging in weaving and other craft-related activities is crucial to maintaining the economic security of many households in rural and urban Bhutan. Such information could be very useful for formulating specific policies related to improving the economic conditions of women.

The data also provides information on the success of some of Bhutan's development programs. For instance, not only did a small number of respondents report fetching water as one of their activities, they also reported spending very little time on it. This shows that the provision of piped drinking water supply by the government has been quite successful; over 84% of the population has access to piped drinking water (Royal Government of Bhutan, 2005). On the other hand, we saw quite a number of respondents who reported the fetching of firewood as their activity during the day preceding the interview. This confirms our a priori knowledge that a large section of people in Bhutan is still dependent on firewood for fuel. Such information could be useful in designing alternative energy or fuel policies as well as conservation policies.

As pointed out earlier, the study has a number of drawbacks. Contextual variables as to where and with whom activities were carried out have been left out. It focused on primary activities and therefore, does not provide much information on activities that respondents would have carried out simultaneously with the primary activities. Information on travel related to various activities has not been captured well. Future surveys on time use should take note of these shortcomings. Future surveys might also be spread out across various seasons so that patterns of activities are captured well. One possible reason for weak correlations between reported level of happiness and time spent on various activities in the current survey could be because the activities covered are not representative.

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