

V.R.F. Series

No.432

Nov. 2007

**Patterns of Time Use and Happiness in Bhutan:
Is there a relationship between the two?**

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Summary

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 wellbeing.

Using the data from pilot survey carried out in Bhutan, this paper looks at the relationship between patterns of time use and happiness. Respondents were asked to reconstruct their previous day in sequential order all activities that they carried out during the previous day with their start time and end time for each activity. These activities are then categorized into seventeen aggregate groups. Amount of time that the respondents spent on each activity is calculated for all respondents. These activities are further classified into two categories- work and non-work activities and time spent on these categories of activities are calculated.

The paper then analyzes time spent on work and non-work activities in terms of gender, age, region (area of residence), family structure, and employment status. Distinct gender patterns are observed. For instance, activities such as weeding of fields and processing of food were dominated by women while activities such as plowing and chopping or sawing of wood were dominated by men. On the whole we observe that amount of time spent on work by women was more than that of men and this was largely due to more time women spent at household maintenance activities (such as cooking) and care of children. Men spent longer time at activities that are physically strenuous. We also observe that pattern of time use differ by age. Total hours of work peaked for those respondents in their prime working ages (31-45) whereas time spent on non-work activities such as praying was longer for elderly people.

In terms of region, we observe that respondents from rural areas spent much longer time at work than those from urban areas. Time use also differs significantly by the type of family one belongs to. We observe that respondents with children had longer duration of work than respondents without children. Employed people worked much longer than respondent with other status of employment.

Although not a robust one, data does establish relationship between pattern of time use and reported level of happiness. We observe that respondents who had longer work hours reported lower happiness than those who worked an appropriate amount of time. We also observe that respondents who worked very short hours of work reported lower happiness than others. Participation in socio-cultural activities and sports and leisure show a positive relationship with the level of happiness; i.e. respondents who participated in social and cultural activities and sports and leisure activities during the previous day reported higher level of happiness than those who didn't. In the descriptive analysis, community participation and engagements in religious activities show inverse relationship with level of happiness, which is a deviation from the findings of past studies. However, in the simple statistical

analysis conducted to test the relationship between reported level of happiness and time spent on various activities, community participation and religious activities show positive relations with reported level of happiness.

Contents

1. Background.....	1
2. Theoretical Context.....	3
3. The Survey	7
Data Collection	7
Data Classification.....	8
4. Empirical Results.....	9
4.1. Sample characteristics.....	9
4.2. Patterns of time use.....	10
4.3. Total hours of work.....	22
5. Differences in Patterns of Time Use	24
5.1 Differences in time use between genders.....	24
5.2 Difference in time use by age groups	31
5.6 Difference in time use by regions.....	36
5.7 Differences in time use by family structure.....	39
5.8 Difference in time use by employment status.....	40
6. Relationship between Time Use and Happiness.....	43
6.1 Total hours of work and reported level of happiness	44
6.2 Socialization vs. reported level of happiness	48
6.3 Community participation vs. happiness.....	49
6.4 Religious activities vs. happiness.....	50
6.5 Sports and leisure vs. level of happiness	51
7. Summary and Conclusion	55

List of Tables

- Table 1: Demographic characteristics of sample population
- Table 2: Average time spent on activities related to crop farming & kitchen gardening
- Table 3: Average time spent on activities related to livestock
- Table 4: Average time spent on forestry & horticulture activities
- Table 5: Average time spent on craft-related activities
- Table 6: Average time spent on construction and repair activities by gender
- Table 7: Average time spent on household maintenance
- Table 8: Average time spent on food processing
- Table 9: Average time spent on business, trade and services
- Table 10: Average time spent on care of children and sick household members
- Table 11: Average time spent on activities related to personal care
- Table 12: Average time spent on activities related to education and learning
- Table 13: Average time spent on activities related to community participation
- Table 14: Average time spent on social and cultural activities
- Table 15: Average time spent on religious activities
- Table 16: Average time spent on sports, leisure and mass media use
- Table 17: Average time spent on visiting public offices/officials and quarrying work
- Table 18: Average time spent on work & non-work activities by the sample population
- Table 19: Average time spent on work and non-work activities
- Table 20: Average time spent on crop farming and gardening by gender
- Table 21: Average time spent in livestock related activities by gender
- Table 22: Average time spent on activities related to forestry & horticulture by gender
- Table 23: Average time spent on craft-related activities
- Table 24: Time spent on household maintenance by gender
- Table 25: Time spent on food processing per person by gender
- Table 26: Average time spent on care of children and sick people
- Table 27: Average time spent on personal care
- Table 28: Average time spent on active sports and leisure by gender
- Table 29: Average time spent on social and cultural activities
- Table 30: Average time spent on religious activities by gender
- Table 31: Average time spent on major work activities by age groups
- Table 32: Total hours of work by area of residence and gender
- Table 33: Time spent on craft related activities by region
- Table 34: No. participants in various craft related activities
- Table 35: Average time spent on household maintenance & other activities by region
- Table 36: Time spent on work activities by structure of family

- Table 37: Time spent on household maintenance and sleeping by men and women with and without children below six years
- Table 38: Time spent on sports and leisure per day per participant by family structure
- Table 39: Time spent on work and non-work activities by employment status
- Table 40: Time spent on various work activities by employment status
- Table 41: Time spent on work and non-work activities by students by region
- Table 42: Mean happiness scores (points) for the sample population
- Table 43: Number respondents who felt stressed constantly by work hour category
- Table 44: Mean happiness scores for respondents who felt under constant stress and those who did not and those who felt they did not spend enough time with family and friends vs. those who didn't
- Table 45: Mean happiness and work time by age category
- Table 46: Average happiness score for respondents by their socialization status
- Table 47: Average happiness per respondents by frequency of socialization?
- Table 48: Mean happiness of respondents by status of community participation
- Table 49: Mean happiness for respondents by participation in religious activities
- Table 50: Mean happiness of respondents by status of their involvement in sports
- Table 51: Mean happiness for respondents who engaged in active & passive sports
- Table 52: Correlation matrix between level of happiness and time spent on work and non-work activities

List of Figures

- Figure 1: Average time spent on work and non-work by age groups
- Figure 2: Time spent on sleep and rest by age group
- Figure 3: Time spent on religious, socio-cultural & community participation by age group
- Figure 4: Time spent on education and learning by age
- Figure 5: Time spent on sports and leisure by age groups
- Figure 6: Relationship between hours work and reported level of happiness
- Figure 7: Mean happiness for respondents by region and gender
- Figure 8: Mean happiness of respondents by structure of family

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- “Demise of Tongfu Gyalpo” *Journal of Bhutan Studies*, Vol. 10, Summer 2004, pp. 9-16.
- “International Politics of Bhutan” *Journal of Bhutan Studies*, Vol. 10, Summer 2004, pp. 90-107.
- “Information Flow, Culture and Society,” with Phuntsho Rapten & Sonam Kinga, in Abdur Khan, ed. *Globalization and Non-Traditional Security in South Asia*, Academic Press, Dhaka, 2001, pp. 207-237.
- “Kharam: A Cattle Festival” in *Wayo, Wayo- Voices from the Past*, the Centre for Bhutan Studies, April 2004, pp. 117-124.
- “Small and Medium Enterprises in Bhutan” in Hirashima et al. *Small & Medium Enterprise (SME) Development in SAARC Countries: Challenges and Policy Reforms*, Kumaran Press Private Ltd., Colombo, 2006, pp. 43-59.

Acknowledgement

My stay at the Institute of Developing Economies as a VRF was very meaningful one. It could not have been so without the help and support that I received from many people. I would first like to acknowledge my counterpart Ms. Etsuyo Arai for unfailing help and support that she provided to me during my stay at the IDE. Despite her busy schedule, she always made herself available to help me with my research. I was especially touched by the sacrifices she made to be away from her family at the weekends to take me around to places of historical and cultural significance to Japanese society. These trips enriched my knowledge of Japanese society.

Ms. Mayumi Murayama encouraged my work a lot. She painstakingly read through drafts of my paper and made valuable comments. I extend her my most sincere appreciations. I would like to thank Mr. Hitoshi Ota, Mr. Hisaya Oda, Mr. Shinichi Takeuchi, Mr. Tatsufumi Yamagata, Mr. Aizawa Nobuhiro, and Mr. Mochizuki Katsuya for their friendship and support. I would also like to thank Mr. Takayuki Sanada, Mr. Minoru Makishima, Ms Etsuko Suzuki, Ms Yoko Kanenari, Mr. Masayuki Sakurai, Ms. Chikako Otsu, and Ms. Raimi Ezaki for taking care of all the logistic arrangements for my stay at the IDE. The staffs of the IDE library were very helpful in making the references for my research available. I would particularly like to thank Mr. Hidetomo Abiko and Ms. Kyoko Yamashita who were always very accessible and helpful.

Finally, I would like to thank the fellow VRFs: Dr. Maragtas Amante of Philippines, Dr. Jean Marara of Rwanda, Dr. John Akokpari of Ghana, Dr. Apichat Santiniramai of Thailand, Mr. Khin Maung Soe of Myanmar, Mr. Heon Soo Kim and Mr. Jun Ge-Joo of Korea, Ms. Megha Shukla of India, and Dr. Yuan Ganming of China. Their interests in my research encouraged me and many of the discussions I had with them provided new ideas and insights to my research. Apart from enriching academic interactions, I had many beautiful moments with them; I will cherish these moments.

1. 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 throne in 1972 (Thinley, 2007). It refers to a set of social and economic interventions that evaluate societal change in terms of 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 the material wants as well as the mental and spiritual needs of individuals. 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 conflicts than other policies that are formulated out of concerns for economic and material gains. It nevertheless, does not rule out the possibility of conflicts 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 putting in place 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. It 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 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 were 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, possibilities of formulating policies that were driven by non-GNH values were 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 wellbeing,
- 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 underway in Bhutan currently 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.

2. 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 wellbeing.

Given this importance, the use or allocation of time has been studied by academics and policy analysts since early twentieth century (Pentland & Harvey, 1999). However, more systematic collection of time use data originated only in 1924 when large time use data were collected by Soviet Union (Juster & Stafford, 1991). Smaller “bits and pieces of information” on time use were collected with a focus on specific activities such as leisure and travel patterns since then but it was not until 1960s that more systematic attempt 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. (Pentland & Harvey, 1999).

Eventually as research progressed, academics formulated 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 and its allocation is determined by utility maximization function as well as 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 an interval of five to ten years. (Juster & Stafford, 1991). Much bigger multinational time use studies had been carried out recently; the EUROSTAT conducted time use studies in 18 European countries in 1996 and 1997 (Pentland & Harvey, 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 which are missing in conventional economic accounts. System of National Accounts which is used to calculate GDP does not measure productive activities accurately (Goldschmidt-Claremont, 1997)¹. A national accounting system that fails to recognize the total productive capacities could lead to “conception and implementation of” policies that are

¹ Goldschmidt-Claremont, L. (1987). Economic evaluations of unpaid household work: Africa, Asia, Latin America and Oceania. In *Women, Work and Development* (Vol. 14), cited in Harvey and Pentland, 1999.

useless and harmful (op cit.). 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. Productive activities also include, in addition to those done for oneself and one's members of the household, voluntary activities carried out for members of the community or for people outside one's community. These activities are fundamental to wellbeing of both people who provide and receive such services. A true picture of wellbeing can be obtained only if these activities are taken into account. Time use studies provide information on such activities that are fundamental to wellbeing of the society.

Detailed nature of information collected by time use studies enables policy makers to understand the needs of special groups of people such as old or disabled. As people age, their demands for assistance and care increase. If these demands are not satisfied, wellbeing of the old and sick people would 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 times. Time use studies are therefore, very useful for understanding overall transformation or changes societies go through. Such information is useful for designing comprehensive and balanced economic and social policies; needless to mention that wellbeing of societies can only be improved by informed policy formulation.

Time use studies provide information on work life balance of individuals in the society. It provides information on the number of hours an individual spends on work and other activities such as socialization with family and friends, sports, and other things that one enjoys doing. Imbalance in time allocation between work and other things is caused by a number of factors amongst which increased number of work hours is the most prominent one. 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 wellbeing and get into a situation of what academics call as "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 wellbeing. 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 wellbeing (Böhnke, 2005).

As individuals juggle to do so many things, they get into stress. Researches have

documented a series of stress related impacts on health of workers. Workers in high strain jobs have been shown to have higher variety of diseases 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 (Kahn et al, 1970)². Behavioral problems such as poor relations with colleagues, absenteeism, and loss of self-confidence and self-esteem are caused by stress. All this affect both actual as well as perceived wellbeing 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 of their members constitute the main resource (Ilahi, 2000). More time they spend at work, lesser time they have for leisure and to the extent leisure is important to wellbeing, it could be said that the poor not only suffer from economic poverty but also from time poverty and therefore low wellbeing. 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 to their time use (Blackden et al., 2006). They work in the farm, cook, attend to sick, fetch water, tend to animals and do 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 not able 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, it merits to be included as an index of Gross National Happiness for a number of direct linkages it provides to assessing wellbeing of individuals. Juster, Courant and Dow (1985) developed a concept called “process benefits” which refers to wellbeing 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 wellbeing. Respondents, which comprised of 909 working women from Texas were asked to reconstruct their previous day in

² Kahn, R..L. & Quinn, R.P. (1970). Role Stress: A Framework for Analysis, *Mental Health and Work Organization*, cited in Wilke et al., 1985.

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 instances, women who did not sleep well the previous night did not enjoy activities she engaged in the next day. By enabling to find the way people spend their time and experience their activities, time use studies provide a meaningful lead to assess wellbeing of individuals.

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

Form 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 the households. It provides data which could be used to assess impacts of policies, compare cultures and societies, gauge lifestyle changes, and to assess needs of special groups of people such as old and disabled. From the perspectives of the present study, time use studies address several shortcomings of GDP-based measures of progress or development. It provides information on unpaid work, voluntary work and other community activities. These activities are all very vital to wellbeing of individuals. More importantly, time use studies enable to assess or understand wellbeing 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 identify the amount of household work, care work and other unpaid work which are 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 level of happiness. Remaining part of the paper is organized as follows: Part three provides an overview of the survey questionnaire. It also 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 wellbeing 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.

3. 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 sample 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 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 of each activities 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 to mainly ii), i.e. allocation of time to various activities and uses some part of i), i.e. time stress, as well.

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 referred. 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, none of the classification system used by developed countries was 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. Following categories of activities were obtained³:

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

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 activities as possible, they have not been categorized further.

The unit of measurement of time is minute for all activities. Data is tabulated to generate amount of time devoted to each activity. These 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.

³ Details of activities comprising the aggregate category are provided subsequently.

4. 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. Nu. 100,160 (\$ 2,455) and mean personal income was Nu. 71,914 (\$ 1,763).⁴ Table 1 provides snapshot of demographic, economic and social characteristics of the respondents.

Table 1: Demographic 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	2	0.7
- Widowed	10	3.5
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

⁴ These figures pertain to only selected respondents that provided information on household and personal income; 206 for household income and 244 for personal income.

Table 1 continued..

Characteristics	N	%
Literacy		
- Literate	167	57.8
- Illiterate	122	42.2
Status of Employment		
- 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:		
- Household	Nu. 100,160 (\$ 2,455)	
- Personal	Nu. 71, 914 (\$ 1,763)	
Region:		
- 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 comprises of activities such as clearing fields, digging or plowing fields, applying manure, weeding fields, harvesting, threshing, and transporting of crops. Digging, planting of vegetables, weeding, irrigation, harvesting of vegetables are included. All travels undertaken for 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 farm, 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
Thrashing	120	2	84.85
Transporting	135	2	21.21
Weeding	90	2	42.43
Clearing field and other agriculture work ¹	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 of 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 comprise of preparation of beds for horticulture plants, weeding, irrigation of orchards, and harvesting of fruits. All travels undertaken for these activities are included too.

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.

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

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, carpentering, 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 ⁵	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 construction of new house, animal sheds, and toilets, minor or major repair of dwellings, and *woola*⁶ activities- construction and repair of public infrastructure such as bridges, schools, health clinics, drinking water supply scheme, mule tracks, roads, temples, office of community leaders, etc.

13 respondents (5% of sample population) were involved in construction and repair activities. *Woola* activities- construction of school and erection of 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

⁵ Includes spinning, dyeing, setting up looms, etc

⁶ Labour contribution that beneficiaries of development projects make

4.2.6 Household Maintenance

Household maintenance activities include cooking, setting up and serving meals, washing dishes, cleaning of inside and outside of house, making fire, fetching water, and laundry related activities (washing, drying and folding cloths). Also included under this category are shopping, packing and arranging household stuffs, and travel related to 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 comprises of activities such as grading or sorting of grains, drying grains, pounding of paddy, grinding maize, milling paddy or maize, churning milk, brewing of 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

Activities	Time	N	Std. Deviation
Brewing <i>ara</i> (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 of vegetables, fruits, and other farm products; selling of livestock products such as butter, cheese and meat; selling of 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.

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.

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

4.2.9 Care of children & sick household members

Included in this category are activities such as feeding children, bathing and dressing up children, looking after children, putting children to sleep, accompanying them to playgrounds and parks, reaching to and picking up from schools, supervising or helping children with their homework, and teaching children. Various forms of helping 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 child care. 57 respondents reported involvement in child care activities and three respondents reported involvement in caring of the sick members of the household. Average time spent on child care was 137 minutes while for care of sick members of the household, it was 398 minutes. Of the child care activities, most of the respondents reported involvement in looking after children, bathing, reaching children to schools and picking up from there, 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 up children	15	4	10.80
Looking after children	244	16	244.35
Drop & pick up from school	28	11	14.38
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 of activities such as sleeping, eating and drinking, washing, dressing up, 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 too.

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 home work were some other activities under this category which have 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
Home work	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 comprises of 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. 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 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. 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

Note: SD refers to standard deviation

4.2.14 Religious Activities

Religious activities comprise of reciting prayers and mantras, offering water and incense to 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 the category. All travels related to these activities are also included in the category.

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 of activities. Participants spent an average time of 31 minutes on these

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

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.

4.2.15 Sports, leisure, & mass media use

Sports and leisure category includes both active and passive leisure activities. Active leisure comprises of activities that require physical exertion such as playing archery, *khuru*, tennis, *taekwon- do*, snooker, and going for 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 in the category.

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 minutes). Also average time spent on passive leisure was much higher than that on active ones. Walk was the most common form of active sports and leisure. Participant respondents spent an average of 79 minutes on walk 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
Walk	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 dairy	43	2	24.75
Listening to music	69	7	52.79
Listen to radio	96	14	60.35
Read books	98	11	77.60
Watched TV	175	85	118.51
Total passive sports	196	117	123.41
Total	215	127	138.36

4.2.16 Residual Activities⁷

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

Visit to public offices and functionaries such as *gup*'s⁸ office to pay tax, obtain permits for firewood and timber or resolve disputes, court to settle disputes, *tshogpa*'s⁹ house for his/her views on certain matters are included in this category. People living in rural areas are often required to undertake such trips. Eight respondents reported undertaking such trips. Visit to court consumed 503 minutes (over eight hours) and visit to *gup*'s office took 231 minutes.

⁷ Since the number of respondents involved in these activities was small, no detailed analysis of them has been done.

⁸ *Gup* is an elected leader of a block

⁹ *Tshogpa* refers to a representative of a community or village

ii. Quarrying Activities

This category comprises of collection of sands, gravels, and digging out stone slabs, boulders and travels related to these activities. Only two respondents reported involving in these activities but nevertheless, the amount of time spent on these activities is very long.

In both visiting public officials and quarrying related activities, number of participants is quite small. Small representation of these activities does not mean they are not common. Small recording of these activities by the survey possibly could be because of the small sample size.

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 <i>gup</i> 's office/other village functionaries	208	6	160.12

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 different number of participants that spent different amount of time, we do not yet get a picture of 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. Sum of these averages give total time spent on work and non-work activities.

We note above that except for personal care, for which number of participants has not changed, average amount of time spent on activities is much smaller than we have seen 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.

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

5. 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 determined often by social norms and type of skills required or the amount of physical assertion involved in a particular activity. So, 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 that respondents had participated in. 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 data clearly shows, 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).

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 thrashing 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 field and digging and women were mostly involved in activities that were physically less demanding such as weeding, thrashing, 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. Data shows that men spent longer time at crop farming and kitchen gardening which is a physically demanding activity.

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

Activities	Male	Female
Work activities	437	536
Non-work activities	973	877

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

Activities	Male			Female		
	Time	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
Transporting				135	2	21.21
Weeding				90	2	42.43
Clearing field and other agriculture work	323	4	226.33			
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		
	Time	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

Data reveal some distinct gender differences in forestry and horticulture activities. Women were exclusively engaged in harvesting of fruits, weeding of orchard, fetching of leaf litters, and other forest products whereas men were engaged in chopping or sawing of 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 orchard, fetching fodder and firewood, both men and women were involved. Women spent much longer 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 for to draw any definite conclusions.

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

Activities	Male			Female		
	Time	N	SD	Time	N	SD
Chopping or sawing of 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 litters & other forest products				230	2	56.57
Total	229	21	182.74	170	18	123.78

Table 23: Average time spent on craft-related activities

Activities	Male			Female		
	Time	N	SD	Time	N	SD
Bamboo crafts	107	3	56.86	313	3	190.35
Weaving				359	40	176.68
Activities associated to weaving	90	1		108	5	34.21
Other crafts	323	4	137.20			
Total	249	9	178.64	361	44	183.71

In the case of craft related activities too, data reveal distinct gender differences. Women were involved mostly in weaving and associated activities whereas men were involved in other crafts comprising of carpentry, painting and blacksmithing. In activities where both men and women were involved, women spent much longer 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.

There was 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, time women spent on cooking, dishwashing, laundry, and shopping far exceeded that of men's. Men on the other hand spent longer time at cleaning (both inside and outside) of houses. 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		
	Time	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

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

Activities	Male			Female		
	Time	N	SD	Time	N	SD
Brewing <i>ara</i> (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

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.

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

Of the small number of participants involved in care of sick, time spent by men on care of sick was much longer than women’s. Men spent 603 minutes as opposed to 90 minutes by women. Dominance of women in child care 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 at care of sick as well. Closer analysis of the respondents involved showed that care of 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 handle circumstances better just in case any mishaps occurred.

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

Activities	Male			Female		
	Time	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

Table 27: Average time spent on personal care

Activities	Male			Female		
	Time	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

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. So part of more time that women spent at work was compensated for by reduction in personal care, mainly in terms of reduced hours of sleeping. Table 27 displays time spent on various activities related to personal care.

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 longer time than women. Lesser time women spent at sports and leisure was another source of cushion for more time they spent in work related activities.

In passive sports and leisure, women spent much longer 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 longer time reading and listening to radio than their female counterparts.

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 on socializing with relatives by women is much higher (220 minutes) than that for men's (114 minutes). 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 of men's (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 28: Average time spent on active sports and leisure by gender

Activities	Male			Female		
	Time	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 cards	90	1	.	60	1	.
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

Table 29: Average time spent on social and cultural activities

Activities	Male			Female		
	Time	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 neighbors	244	4	243.22	244	9	188.22
Socialize with relatives	114	7	70.38	220	3	303.48
Total	140	61	116.18	214	54	167.18

Table 30: Average time spent on religious activities by gender

Activities	Male			Female		
	Time	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

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

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.

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 highest mean time on farming and kitchen gardening was for respondents in the age range of 31-45 years and in live stock 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.

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

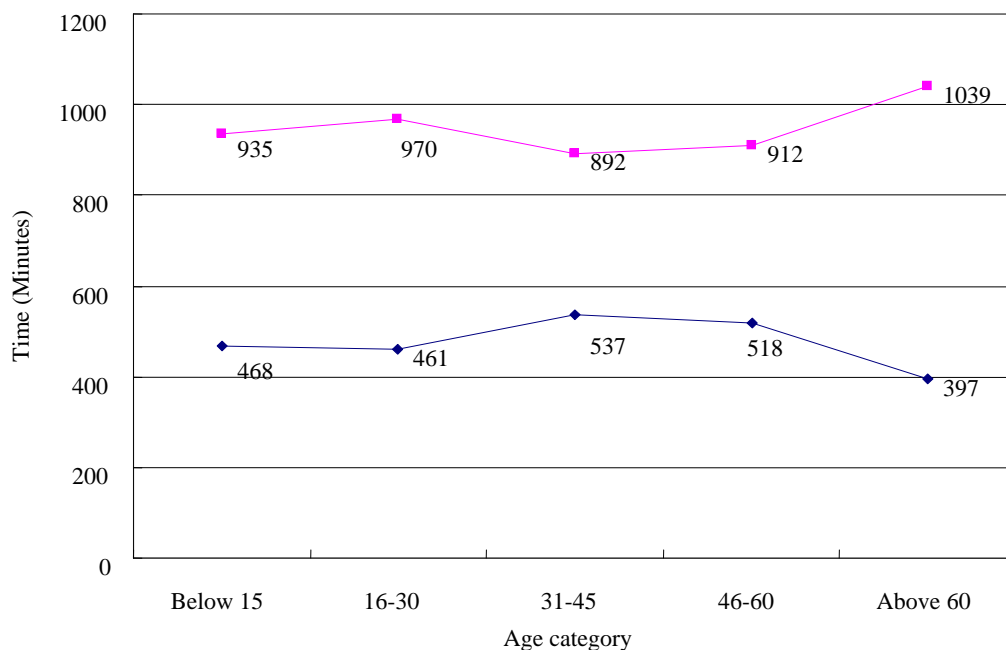


Table 31: Average time spent on major work activities by age groups¹⁰

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 processing		114	131	90	175
Business, trade & services		449	460	418	135
Care of children & sick		121	138	247	318

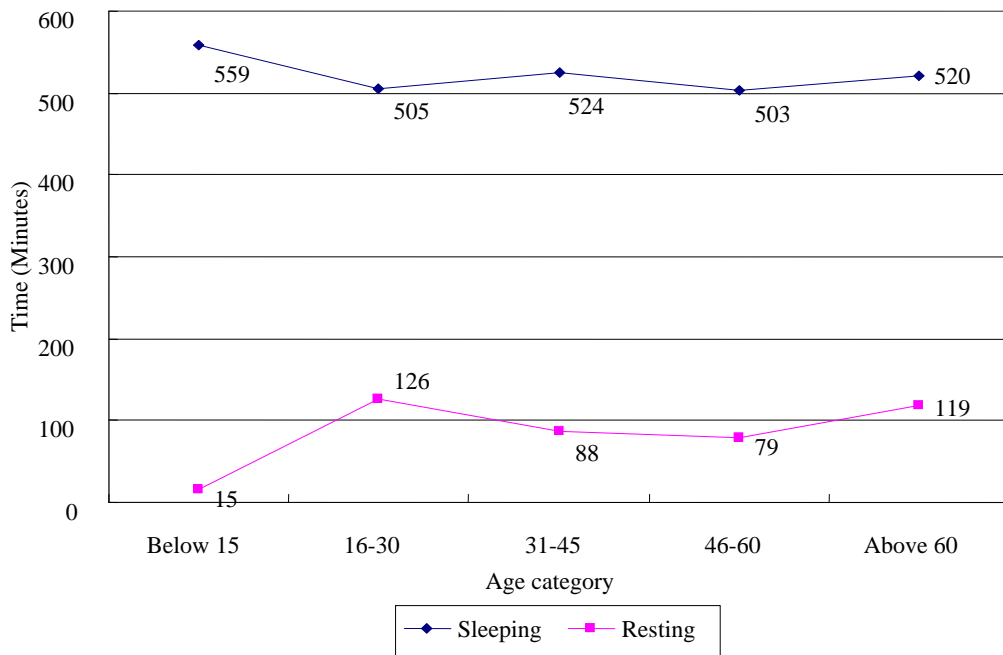
¹⁰ Detailed statistical table with number of participants and standard deviations is provided in appendix 1; these variables could not be fitted to the above table.

The above pattern, i.e. average time being highest 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.

Data shows that the frequency of respondent involved in child care were mostly those in their reproductive ages- 16 through 45. However, we also observe that time spent on child care is much higher 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 of younger respondents. Data reveals a very strong association between 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. 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 lot of 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.

Another activity where age pattern was distinctly observed was education. 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 longer time than respondents in other age groups.

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

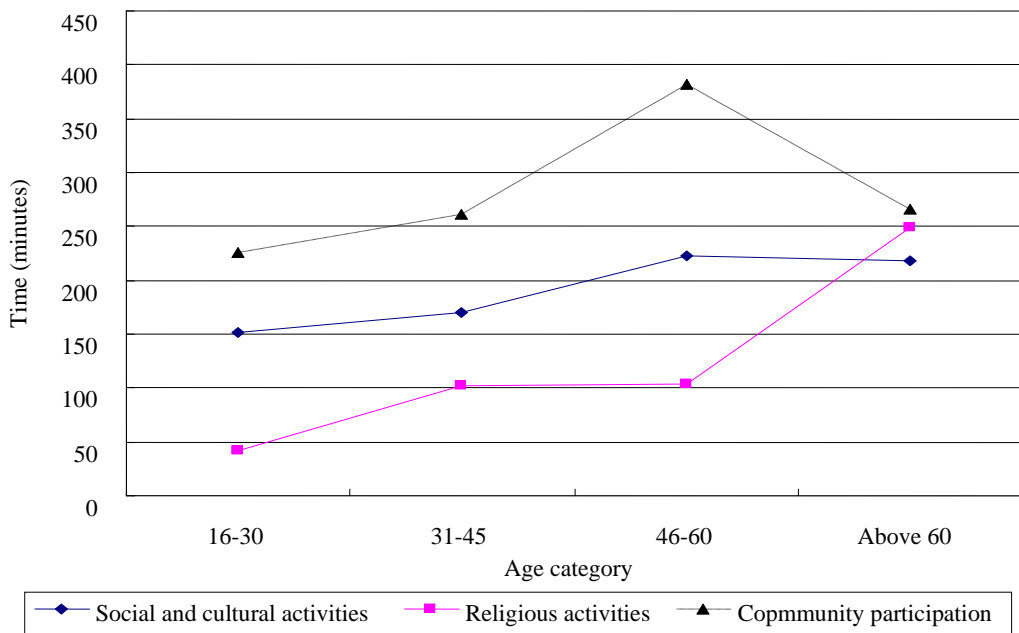


Figure 4: Time spent on education & learning by age

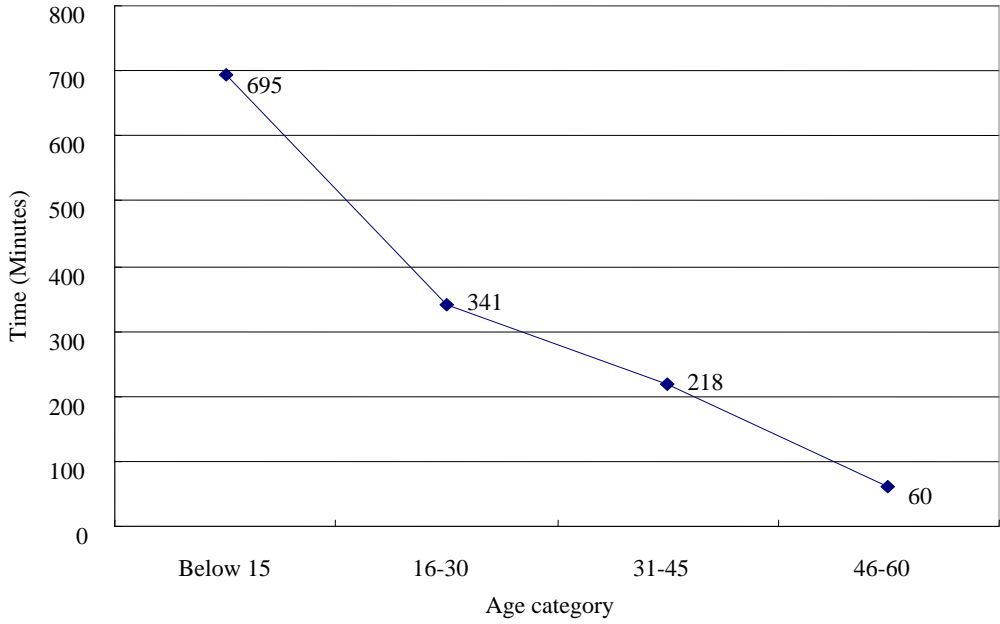
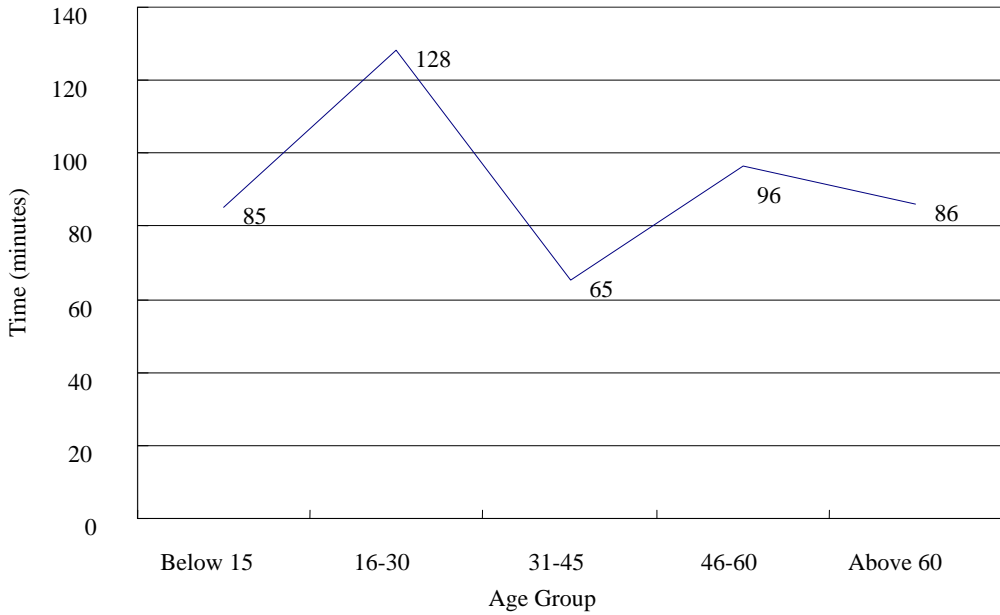


Figure 5: Time spent on sports and leisure by age groups



Age patterns become even more distinct in sports and leisure activities. Respondents in the age range of 16-30 spent more time on 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 time for sports and leisure.

5.6 Difference in time use by regions

What one does is often decided by where one is located or based at. 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.

For both men and women, burden of work is much more for the residents of rural areas.

Above data shows that residents in rural areas on average worked more than 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.

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

Region	Male			Female		
	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

Table 33: Time spent on craft related activities by region

Activities	Urban		Rural	
	Mean	N	Mean	N
Bamboo craft			210	6
Weaving	312	13	382	27
Activities related to weaving	60	1	114	5
Others (painting, blacksmithing, carpentry)	390	1	300	3
Total	306	15	356	38

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.

Analysis was also extended to see if there were variations within rural areas. Doing so, it was found that basket making and other bamboo crafts were reported mostly by respondents of Trongsa while weaving was reported mostly in Bumthang, Lhuntshe and Chukkha. See table 34.

In household maintenance, we observe that time spent on shopping by rural women was much longer than women in urban areas. This probably could be due to longer time rural people spend traveling to get to markets or shops and not due to longer time they spend on actual shopping.

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 child care although the difference isn’t that significant.

Table 34: No. participants in various craft related activities

District	Bamboo crafts	Other crafts	Weaving	Others
Bumthang	1	1	13	4
Chukha			10	1
Lhuentse		1	8	1
Mongar		1	4	
Paro		1		
Sarpang			2	
Thimphu		1	3	
Trongsa	5			
Total	6	5	40	6

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

Activities	Urban			Rural		
	Mean	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 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.

We observe above that respondents with children had longer work hours than other type 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 issues such as cooking and doing laundry, etc.

Table 36: 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

Table 37: 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	
	Male	Female	Male	Female
Yes	125	217	525	492
No	73	182	520	518

Table 38: 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

This increase in total work hour, which is caused by increased household maintenance, was compensated for by reduced hours of sleep and leisure. 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.

Another source of cushion or adjustment for increased work hour came from reduced leisure time. Table 38 shows that 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 and without children.

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 employment 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: Time spent on work & non-work activities by employment status

Employment Status	Work			Non-work		
	Mean	N	SD	Mean	N	SD
Employed ¹¹	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

Table 40: 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, trade & services	62	145	21	26	0	171
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

¹¹ Includes farm-family members actively working

As expected we observe that highest amount of time to 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 longer time on most of the activities under 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.

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)¹² 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.

While engagement of students in economic activities is interesting and noteworthy, I would like to caution the readers from making further conclusions. Survey in some areas 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.

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

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

¹² There were 24 students in the sample and were distributed equally between rural and urban areas.

6. 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 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. 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 wellbeing 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 wellbeing. 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

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. Data shows that, 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 appropriate hours. People who reported that they spent little time with their family or friends also reported low level of subjective wellbeing. These studies have also shown that people with no work or short hours of work report low levels of happiness or subjective wellbeing.

The channels through which long duration of work affects wellbeing are stress and the related health problems that people suffer. Studies carried out in Japan had revealed a positive correlation between ‘*karoshi*’ (a syndrome of cardiovascular attacks such as strokes, myocardial infarction or acute cardiac failure). Uehata (1991)¹³ 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 wellbeing is not being able to maintain a balance between work and other aspects of life such as spending time with family, friends, doing exercise and other things that one enjoys doing. 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 able to establish social ties.

Findings of this survey show relationship 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

¹³Uehata, T. (1991). “Long working hours and occupational stress-related cardiovascular attacks among middle-aged workers in Japan,” *Journal of Human Ergology*, 20, 147-153; cited in Working Long Hours, HSL/2003/02, available at http://www.hse.gov.uk/RESEARCH/hsl_pdf/2003/hsl03-02.pdf

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.

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.

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, lowest reported level of happiness is observed for respondents with long duration of work, which are found in this case for 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, level of happiness is just slightly higher than those for highest hours of work indicating that below certain threshold hours of work, reported level of happiness falls.

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.

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

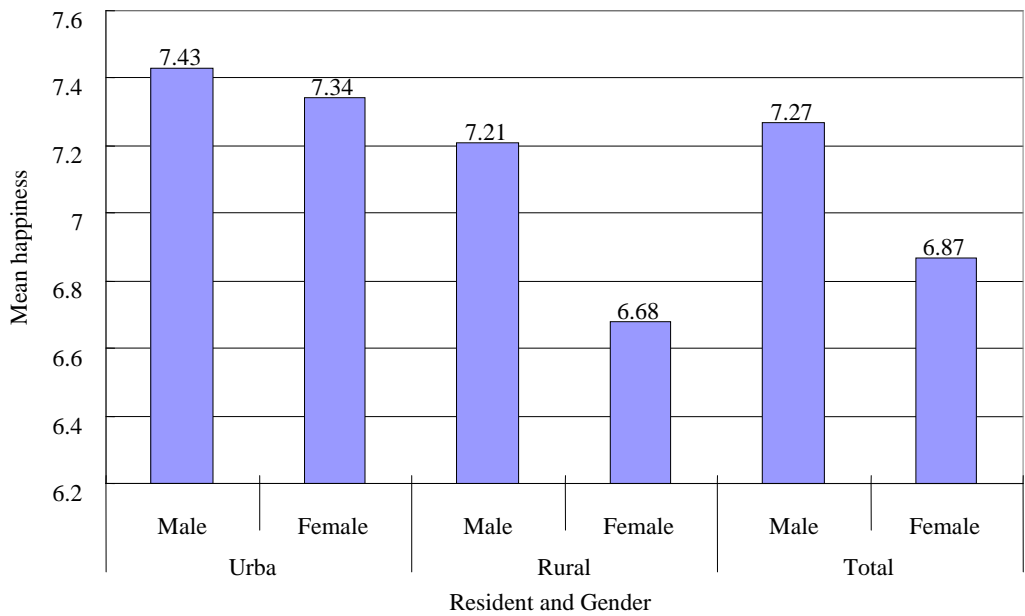
Table 44: Mean happiness scores for respondents who felt under constant stress and those who felt did not have enough time for family and friends vs. those who didn't feel so

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

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



Figure 7: Mean happiness for respondents by region and gender

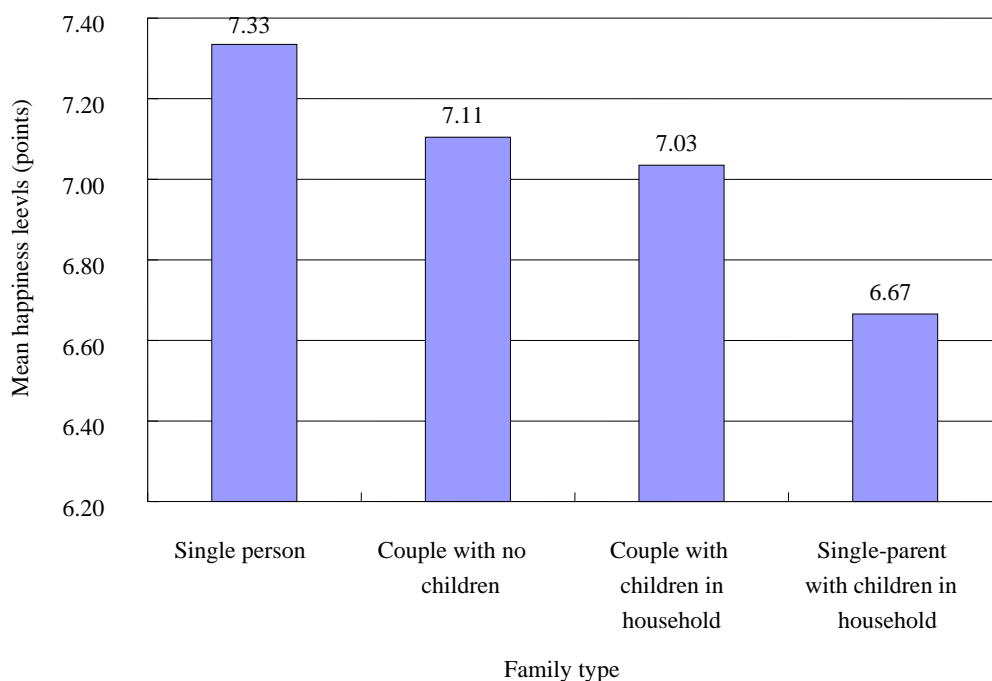


We observed earlier that burden of work was more for women than that of men. We also observed that burden of work was more for rural respondents than their urban counterparts. By extension of the above findings, we should observe low level of happiness for female respondents and respondents who are from rural areas. Findings of 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.

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

Figure 8: Mean happiness of respondents by structure of family



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.

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. Data reveals findings that are in congruence to the above logic; single parent with children in the household reported lowest level of happiness.

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 wellbeing 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 wellbeing abound several writings and researches of the past. European Quality of Life Survey (2005) found that subjective wellbeing declined significantly in population group 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 wellbeing.

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

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

Table 47: Average happiness by frequency of socialization

Frequency	Socialized with		
	Neighbors	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

The survey reveals findings 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.

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.

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 wellbeing. Participatory activities such as volunteering affect one's wellbeing through two channels- intrinsic and extrinsic ones (Meier and Stutzer, 2004). On the intrinsic front, people's wellbeing increase 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

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

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

similar help from others in future. For many, volunteering also serves as a prerequisite to many activities that they want to take up.

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 their self-worth and self-efficacy. Extrinsically, community participation in development activities and political events are expected to yield results that are balanced and sustainable.

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

What could be the reasons behind as to 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 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 must be missing from the data.

6.4 Religious activities vs. happiness

Another activity which has been found to affect happiness of the people is religious engagements. Barkan and Greenwood (2003) cite three channels through which religious activities affect wellbeing or happiness of individuals. First, engagements in religious activities facilitate building social contacts. These social ties yield emotional and instrumental support during times of difficulties and problems. Second, by turning to their faith, people are better able to cope with stress and other problems in their life. Engaging in religious activities bolster self-esteem and efficacy. Religious engagements offer a sense of meaning in life leading to increase in perceived wellbeing of individuals. Third, through denouncement or

Table 49: Mean happiness for respondents by status of participation in religious activities

Religious involvement	Mean	N	Std. Deviation
Yes	6.91	141	2.04
No	7.20	148	2.07

discouragement of unhealthy behaviors such as use of alcohol, tobacco and drugs, engagement in religious activities promote healthy life styles.

Data reveals yet again a result completely in contrast to the above studies as well as to the general opinion. We find that respondents who were not involved in religious activities reported higher level of happiness than those who were involved. For a country where religion plays a significant role, this finding is completely contradictory to the popular opinion and observations. This contradictory finding leads us to doubt the quality of data. However, if all respondents who participated in religious activities were mostly unhappy persons or participated in religious activities to overcome unhappiness or sorrows, the findings could hold true. Further research would be required to substantiate such a claim.

6.5 Sports and leisure vs. level of happiness

The role of sports and leisure in affecting wellbeing of individuals has widely been studied. These studies have found sports and leisure, particularly the active ones to have positive causal effects on wellbeing of individuals. Schnohr et al. (2005)¹⁴ found people with sedentary leisure patterns to report high level of stress, dissatisfaction and less psycho-social wellbeing. In their study of working Brazilian women, Ponde and Santana (2000)¹⁵ found the ones 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. Study by Biddle and Mutrie (1997)¹⁶ 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 release of endorphins, social interactions, and experience of success and self-efficacy.

Leisure activities such as dance and music affect wellbeing by inducing positive mood

¹⁴ Schnohr, P. et al. (2005). "Stress and life dissatisfaction are inversely associated with jogging and other types of physical activity in leisure time- The Copenhagen City Heart Study." *Scandinavian Journal of Medicine & Science in Sports*, 15: 107-112; cited in Uhrig (2005)

¹⁵ Ibid

¹⁶ Cited in Psychological Well-being (Happiness); available at <http://www.texcpe.com/cpe/PDF/ca-happiness.pdf>

and social interactions. 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 wellbeing generally.” On the other hand, excessive engagements in leisure activities such as watching television had been found to affect wellbeing or happiness negatively. Frey et al. (2005) found that heavy television watchers experienced lower wellbeing than others. Many individuals lose control over their behavior and watch TV in excess. Such a behavior leads individuals to regret when the opportunity cost of their time is high. Long hours of TV watching leads to higher material aspirations and anxiety and therefore, lower life satisfaction. Also, excessive watching of TV crowds out other activities, particularly relational activities, which matter significantly to one’s wellbeing (Bruni and Stanca, 2005).

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

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 however, indicates that the causal effect of active sports on happiness is more than that of passive ones.

Table 50: 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

Table 51: 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 passive	7.50	22	1.79

Table 52: Correlation matrix between level of happiness and time spent on work & non-work activities

	Level of happiness	Work hours	Community participation	Religion	Social & cultural	Sports & leisure
Level of happiness	1					
Work hours	-0.08 (-0.07)	1				
Community participation	0.02 (0.03)	-0.23**	1			
Religion	0.07	-0.38**	-0.06	1		
Socio-cultural	0.01	-0.36**	-0.07	-0.08	1	
Sports and leisure	0.05	-0.47**	-0.09	-0.09	0.01	1

Figures in parentheses for work (is controlled for employment) and community (is controlled for region)

** Correlation is significant at the 0.05 level (2-tailed).*

*** Correlation is significant at the 0.01 level (2-tailed).*

We observed relations between the reported level of happiness and time use patterns that echo the results of previous studies and are in congruence with the general conjecture. However, as it is a norm with such analysis, some statistical tests would be appropriate. A bivariate correlation run between reported level of happiness and work hours, socialization, community participation, religious activities, and sports and leisure yields the following results.

We observe a negative correlation between the reported level of happiness and work hours but it is not statistically significant. We also observe right signs for relationship between reported level of happiness and community participation and religious activities. Similarly, we observe positive correlation between reported level of happiness and time spent on socio-cultural activities and leisure though the relation is not statistical significant in both the cases.

Thus, although direction or signs of correlation is right between reported level of happiness and time spent on various activities, most of these relations are statistically not significant. Does this mean that we dismiss using time use and balance as an indicator for GNH? My answer would be a “NO” for number of reasons. First, as noted above the signs of associations are correct. Data on time spent on various activities is from the previous day whereas the reported level of happiness refers to state of how happy people considered

themselves to be on the whole. The degree of association could surely improve by either spreading the survey over longer period of time so as to get an accurate picture of the pattern of time use or by asking people to report how happy they felt while doing a particular activity at particular point of time. Second, the recent survey was a pilot one and the way questions were structured and interviews administered were not so perfect; there is a room to doubt the quality of the data. With the experience we had gained during the pilot survey, questions could be improved and interviews administered in a better way. Finally, the sample size for the survey is quite small. Statistically significant relations between happiness and time spent on work and non-work activities could possibly be established by conducting the survey for a bigger group of respondents.

7. Summary and Conclusion

To sum up, we found that total burden of work for women was more than that for men and was largely due to greater time commitment of women to household maintenance, child care, 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 physically not so demanding. Men spent much longer time at both passive and active sports and leisure. Men also slept longer than women and spent longer time at other activities related to personal care.

We observed patterns of activities that are consistent with life-cycle variation in time use. Confirming to 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 pattern of time use differed between the rural and urban residents. Most of the activities such as agriculture, livestock, forestry and horticulture, quarrying, and visit to public offices, were confined to rural areas. Most of the business, trade and service related activities are confined to urban areas. Apart from variations between urban and rural areas, we also observed variations within rural areas. We found that weaving was prominent in Bumthang and Lhuentse whereas bamboo craft works were more prevalent in Trongsa. This shows cultural influences to activities in different regions.

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 works associated with the presence of children. These families spent more time they 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 relationship between time use and happiness, we observe positive relations that are largely consistent with previous studies although they are statistically not significant.

So, in terms of the objectives set for it, the study fulfils the first two: i) finding out the types and amount of unpaid work and ii) differences in pattern 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 wellbeing directly but are somehow excluded from the accounts that are used to measure our wellbeing. As for the second objective, the study presents a good picture of how age, gender, area of residence, employment and family structure determines allocation of time. The study quite 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 the data 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 study presents a wide array of information related to public policy issues. For instance it was found that rural people spend quite substantial amount of time on visiting *gup's* office and other public functionaries for various reasons. This amounts to 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 decent level of education. Instead we saw that significant number of people including rural residents spent long time watching TV. Since excessive watching of TV affects wellbeing 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 the members of the family. Agencies concerned with improving nutritional status of the population could take such information into account while formulating policies and designing programs related to nutrition. Important contributions women make towards production of other goods and services at home was 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 economic conditions of women.

Data also provides information on the success of some of Bhutan's development programs. For instance, not only a small number of respondents reported fetching of water as one of their activities, they spent very short 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 fetching of firewood as their activities during the day preceding the interview. This confirms our a priori knowledge that 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. Several more information could be obtained from the data to investigate the public policy issues.

As pointed out earlier, the study has a number of drawbacks. Contextual variables as to where and with whom activities were carried out had 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 correlation 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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Appendix 1: Time spent on various activities by age group

Activities	Below 15			16-30			31-45			46-60			Above 60		
	Mean	N	SD	Mean	N	SD	Mean	N	SD	Mean	N	SD	Mean	N	SD
Crop farming				350	10	180	412	23	191	298	14	206	354	7	197
Livestock				116	17	119	151	28	157	222	25	208	172	17	197
Forestry and horticulture	30	1	.	228	10	162	234	14	180	164	7	161	163	7	115
Construction & repairs				540	2	42	418	5	196	365	3	203	573	3	74
Craft related activities	620	3	57	355	21	172	356	17	167	263	9	201	130	3	46
Household maintenance	10	1	.	221	80	180	194	70	166	202	45	189	145	22	110
Processing of food				114	5	91	131	8	96	90	2	0	175	2	49
Care of children and sick				121	26	146	138	21	189	247	10	265	318	3	305
Community participation				226	7	184	261	6	197	383	4	245	267	3	279
Education and learning	695	1	.	341	13	230	218	4	186	60	1	.			
Social & cultural activities				152	49	125	170	39	152	223	19	157	219	8	206
Religious activities				42	46	87	102	34	201	103	33	157	249	28	284
Sports & leisure	170	2	42	216	60	136	199	29	145	236	23	159	213	13	111

SD= Standard Deviation

Appendix 2: Time Use Survey Questionnaire

Respondent #			

Your Use of Time

Time Stress

176. How often do you feel rushed?

TS1	Everyday	Few Times a Week	Once a Week	Once a month	Few Times a Year	Never	Don't Know
	1	2	3	4	5	6	8

177. Compared to two or three years ago, do you feel more rushed, about the same or less rushed?

TS2	More rushed	About the same	Less rushed	Don't know
	1	2	3	8

178. How often do you feel you have time on your hands that you don't know what to do with?

TS3	Everyday	Few Times a Week	Once a Week	Once a month	Few Times a Year	Never	Don't Know
	1	2	3	4	5	6	8

		Yes	No	Don't Know
		Circle appropriate number		
TS4	179. Do you feel that the days are just too short to do all the things you want?	1	2	8
TS5	180. At the end of the day, do you often feel that you have not accomplished what you had set out to do?	1	2	8
TS6	181. Do you worry that you don't spend enough time with your family or friends?	1	2	8
TS7	182. Do you feel that you 're constantly under stress trying to accomplish more than you can handle?	1	2	8
TS8	183. Do you feel trapped in a daily routine?	1	2	8
TS9	184. Do you feel that you just don't have time for fun any more?	1	2	8
TS10	185. Do you often feel under stress when you don't have enough time?	1	2	8

Time Diary- Previous Day

We would like to know how you spent your time yesterday? Beginning with when you woke up, can you please recount the various activities you performed and how long they took.

Time Started	Time Finished	Activity

Time Use

186a.. On an average day last week, approximately how many hours did you spend at the following activities?

Code	Activities	Total
TU1	Working at your job, tending your farm	
TU2	Taking care of or playing with children in your home	
TU3	Providing extra care or assistance to sick or elderly persons in your home	
TU4	Shopping	
TU5	Preparing Food	
TU6	Eating	
TU7	Doing housework, home maintenance or other chores for your household	
TU8	Participating in sports or hobbies	
TU9	Visiting/socializing with friends or neighbours	
TU10	Visiting socializing with family members	
TU11	Reading	
TU12	Relaxing	
TU13	Praying/worshipping/meditating	
TU14	Watching TV, listening to radio	
TU15	Using computer (outside of work), playing video games	
TU16	Participating in voluntary activities	
TU17	Participating in religious activities	
TU18	Participating in political activities, visiting government offices	
TU19	Community activities (labour, meetings etc)	
TU20	Educational courses/activities	
TU21	Others (please specify).....	

Enjoyment of activities and perceived gap between actual and desired use of time

Activity	186b. How much do you usually enjoy these activities?		186c. Based on how you would like to spend your time, do you currently spend too much, not enough or about the right amount of time on each of the activities.	
	1=A lot		1= Too Much	
	2=Somewhat		2= About the Right Amount	
	3=Did not enjoy		3= Not Enough	
	9= Do not perform this activity		9= Do not perform this activity	
	Insert Code From Above		Insert Code From Above	
Working at your job, tending your farm	TU22		TU43	
Taking care of or playing with children in your home	TU23		TU44	
Providing extra care or assistance to sick or elderly persons in your home	TU24		TU45	
Shopping	TU25		TU46	
Preparing Food	TU26		TU47	
Eating	TU27		TU48	
Doing housework, home maintenance or other chores for your household	TU28		TU49	
Participating in sports or hobbies	TU29		TU50	
Visiting/socializing with friends or neighbours	TU30		TU51	
Visiting socializing with family members	TU31		TU52	
Reading	TU32		TU53	
Relaxing	TU33		TU54	
Praying/worshipping/meditating	TU34		TU55	
Watching TV, listening to radio	TU35		TU56	
Using computer (outside of work), playing video games	TU36		TU57	
Participating in voluntary activities	TU37		TU58	
Participating in religious activities	TU38		TU59	
Participating in political activities, visiting government offices	TU39		TU60	
Community activities (labour, meetings etc)	TU40		TU61	
Educational courses/activities	TU41		TU62	
Others (please specify)	TU42		TU63	

Social and Family Activities

187. In the last month, how often did you socialize with your neighbours? Was it:

TUSoc1	Few times per week	Few times a month	Once a month	Not in last month	Don't Know
	1	2	3	4	8

188. In the last month, how often did you socialize with your friends? Was it:

TUSoc2	Few times per week	Few times a month	Once a month	Not in last month	Don't Know
	1	2	3	4	8

190. In the last month, how often did you socialize with your relatives (outside of the people you live with)? Was it:

TUSoc4	Few times per week	Few times a month	Once a month	Not in last month	Don't Know
	1	2	3	4	8

Woola Activities

191. During the past twelve months, how many days of woola did you contribute for each of the following activities?

	Woola Activities	Days
Woola1	Thungchu (drinking water supply)	
Woola2	Lhakhang (temple) construction	
Woola3	Bridge construction	
Woola4	School construction	
Woola5	Maintenance of Gup (block chief executive) office	
Woola6	Maintenance of mule track	
Woola7	Maintenance of BHU/ORC centers	
Woola8	Maintenance of animal husbandry center	
Woola9	Carrying bagges for officials	
Woola10	Chadri/official visit preparation	
Woola11	Irrigation projects	
Woola12	Other (Specify).....	

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