ASSESSING
WORK MOTIVATION
OF FOREST GUARDS

MADHYA PRADESH

Wildlife Conservation Trust

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EXECUTIVE SUMMARY

The Wildlife Conservation Trust (WCT) has, for over a decade, been striving to improve the working and living conditions of frontline forest staff across India. By providing basic equipment and training we aim to ensure that basic amenities are available to perform their duties. However, this does not necessarily ensure a motivated and high trust and engaged field staff. It is a well-established fact that motivation levels are directly co-related to efficiency and efficacy of work, especially given the demanding work conditions of frontline forest staff. Motivated and emotionally engaged field staff is thus critical for the protection of our forests. Their psychological well-being is fundamental for them to be able to perform their duty.

This report presents findings from a study of association with work environment, work satisfaction, and psychological well-being of forest guards and its implications on the department's human resource policy. A randomized sample of 242 forest guards from all of the tiger reserves in Madhya Pradesh responded to questionnaires measuring employee satisfaction and motivation. The machine learning algorithm and mean comparisons suggested that Kanha, Bandhavgarh, and Panna form a group of high work association with low work satisfaction and well-being; whereas Pench, Satpura, Sanjay-Dubri form another group low work association and high work satisfaction & well-being. Machine learning-based classification and regression tree (CART) analysis suggested that feedback, task identity, skill variety, and organizational commitment are some of the important factors affecting work motivation.

The following policy and management recommendations are suggested based on the analysis:

1) **Infrastructure**

   A. **Staff quarters:** Centrally located staff colonies developed on the lines of police colonies

   B. **Schools for children till higher secondary:** Each of the tiger reserves should have facilities of schools till higher secondary level for children of the forest guards.

   C. **Healthcare facilities:** Access to quality healthcare facilities for the guard and his family within the staff colony should be provided.

2) **Training**

   A. **Improvements in human resource management:** Decision-making competence of supervisors, following a collectivist process of decision-making, and giving limited autonomy are strategies that can be adopted to improve human resource management.

   B. **Feedback:** Building capacities in the officers that supervise the guards on feedback mechanisms should be made a part of the human resource management training for officers.

   C. **Increase sense of achievement among forest guards:** We recommend trainings to officers on inclusive decision-making, achievement-orientated job profiling, community based rewards, and according social status and recognition.

   D. **Safety:** Training forest guards in basic first aid and enhancing their perception of safety will help increase the feeling of safety.

3) **Institutional**

   A. **Psychological health:** An institutional mechanism like medical and counselling facilities needs to be put in place for improvement of their psychological health.

   B. **Financial incentives:** We recommend instituting a special wildlife allowance for all tiger reserves.

   C. **Work-Life balance:** Interventions like rotations, shift-duties, additional staff and support to the workforce need to be incorporated in the human resource policy.

CONTENTS

1. BACKDROP

Forest guards in India protect some of the world's most valuable ecosystems and the last refuges of various threatened species. Their job profile entails physically challenging and psychologically demanding working conditions as they carry out the last mile implementation of protection policies and enforcement of law, with only one to three daily wage workers to assist them.

Known as the tiger state of India, Madhya Pradesh has the highest number of tigers in the country and the most number of tiger reserves. The tiger reserves are geologically diverse and biologically rich areas as well as major tourist attractions. Ranking third amongst Indian states for number of domestic tourists Madhya Pradesh gets as many as 185 million domestic visits. According to Economic Survey 2018 it ranks among the top five states for foreign tourists as well, thus making it an important source of revenue for the state and the country. The tiger reserves attract a large share of the tourists visiting Madhya Pradesh. Much credit has to go to the excellent management and protection of these tiger reserves. Forest guards implement management practices, patrol the forests, and ensure implementation of law. To accord this level of protection entails unprecedented pressure on the field staff responsible for implementation of these policies. In order to maintain such high standards it is critical to understand, maintain and improve the work motivation and psychological well-being of the frontline forest staff.

The report begins by reviewing work conditions and psychological aspects of forest guards' job in the tiger reserves; further presents results and implications of data obtained on implicit cognition, motivation, and attributes related to work conditions of forest guards. It goes on to recommend institutional and policy changes that can enhance the well-being and work motivation of the frontline forest staff especially forest guards.

2. WORKING CONDITIONS OF FOREST GUARDS

The working conditions of forest guards in tiger reserves are more challenging compared to other forest department wings (i.e. R & E, and Production). They are required to stay in the anti-poaching camps or protection hut along with one to three *vanamajur* (daily-wage workers). The forest guards can avail only four days of leave per month, and rarely get to visit their family.

Duties of a forest guard include foot-patrol (which can be as much as 45 km per week), monitoring tiger population and prey densities, management of water resources, creation and maintenance of fire-lines, forest fire fighting, management of human-wildlife interface in nearby villages, maintaining roads in the tiger reserves, and protecting the forest against grazing, wood cutting, trespassing, wildlife crime investigation etc. Each forest guards is responsible for at least one forest beat. The size of the beat varies from generally 500 to 1500 ha. Forest guard operates out of the remotely located anti-poaching camps in forest; most of which have rudimentary facilities, like a metal bed, a storage trunk, solar-powered lighting (one LED light and wireless radio set charger). In many cases, some of the equipment is dysfunctional. These camps do not have electricity and piped water supply making working and living conditions difficult. These unique and challenging conditions affect the aspects of the work motivation of forest guards.

3. PSYCHOLOGICAL ASSESSMENTS

3.1 Psychological aspects of work motivation

In the science of psychology, work motivation is conceptualised in multiple ways, which has led to the construction of different theories about it. Among them, job based theories form one such division and have been used as a primary theoretical tool to understand work motivation, which has been used in this study. This approach focuses on analysing attributes of work and working conditions as primary drivers of work motivation. Employee satisfaction has been defined in many ways (e.g., Spector, 1997). Intrinsic and extrinsic are commonly considered aspects of employee motivation and measures have been developed around them (e.g., Warr, Cook, and Wall, 1979). Intrinsic motivation is defined as emerging from within an individual due to their own will and interest. Employees who are intrinsically motivated enjoy their work including the challenges that come with it. On the other hand, if employees are extrinsically motivated then rewards are required to sustain the work motivation. Although intrinsic and extrinsic are commonly considered factors that define motivation, understanding attributes of work present a wholesome picture of work motivation. The two-factor theory and Job-Characteristics Model are frequently reported among models that analyse attributes of work.

Herzberg's (1966) two-factor theory assumes that the content of the job is the primary driver of a person's motivation and it understands job motivation in terms of two factors: Motivators and Hygiene factors. The Hygiene factors include pay, job security, status, working conditions, fringe benefits, job policies, and relations with co-workers. The Motivators as a factor includes degree of challenge, responsibility, recognition for achievement, opportunity to do meaningful work, involvement in decision making, and sense of importance for organization. Hygiene factors are external to work and their absence causes dissatisfaction. Job satisfaction is a function of motivators. Gagné & Panaccio (2014) concluded that, "the two-factor theory provides interesting insights into the role that need satisfaction may play in eliciting motivation." (p. 167). The present report has investigated work motivation of the forest guards using the theoretical frameworks of employee satisfaction, Herzberg's two factor theory and Job Characteristics Model.

3.2 Studies on work motivation

Hackman and Oldham (1976) provided a detailed causal model of employee motivation based on Job Characteristics, arguing that the nature of tasks itself is the key to work motivation. The model proposes five core job characteristics (skill variety, task identity, task significance, autonomy, and feedback) that influence three critical psychological states (experienced meaningfulness, experienced responsibility for outcomes, and knowledge of the actual results), which in turn lead to work outcomes (job satisfaction, less absenteeism, work motivation, etc.). The work done by an employee gives them a sense of self-worth and identity. This implies that a person, who can identify with the job they are doing, will encourage them to do the job better (Choge et al., 2014). By highlighting the importance of the order of needs from the Maslow's Hierarchy of Needs, their research showed that individuals with lower-order needs, which include physiological needs, safety and love, were less motivated by enriching characteristics of the job like variety, independence, and feedback. On the contrary, individuals with strong higher-order needs, which include self-actualisation and self-esteem, do well and experience more job satisfaction with enhanced job characteristics (Maslow, 1968). Cross-cultural reviews of job-satisfaction (Judge et al., 2011) concluded that Job Characteristics Model is one of few theories that garnered the most support across cultures. Deci and Ryan (2014) reviewed importance of universal psychological needs for understanding motivation in the workplaces to make them more nourishing for employees. They argue that, "human beings have

deeply evolved psychological needs to be competent, autonomous, and related to others, such that, in contexts where these needs are satisfied, people evidence more volitional, high-quality motivation and greater well-being, and when these psychological needs are thwarted, people display various forms of diminished motivation and more symptoms of ill-being" (p. 13). Deci and Ryan (2011) argued that "people's 'psychological experiences' are the regnant causes of their behaviours that will enhance the people's autonomous motivation, mindfulness, perceived competence, and feelings of relatedness to others" (p. 18). Many researches, reviews and meta-analyses have confirmed relationship between employee motivation and employee performance (e.g., Latham, 2007; Wright, 2001).

Among the studies on analysis of structure of job satisfaction in an Indian industrial context, Takalkar & Coovert (1994) found support for the generalisability of the job satisfaction dimensions developed in the USA (also see Sekaran, 1983). Erez's (1994) findings were that Scandinavian, German, Japanese, and Indian researches focused more on employee well-being and satisfaction unlike USA and Israel that focus on performance appraisal. Pareek (1974) provided a three-level conceptual model of work motivation with psychological needs at level one, work role and commitment at level two, and satisfaction at level three. Well-being and health have an important effect on the workers and organizations. Workers who are suffering from poor well-being and health at workplace can have poor performance and less productivity at work compared to workers who are not suffering from poor well-being and health (Lou, 1999). Over the last few decades the workforce has been undergoing its own challenges, reasons like globalization are responsible for the same. Managers are required to undergo training to raise awareness on how work stress can affect employee well-being (Sparks et al., 2001).

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3.3 Studies on forest guards

Across the globe, quite a few studies have focused on the physical health of forest workers. (e.g., Koskimies et al., 1992, Futatsuka et al., 1989, Gallis, 2006, Lilley et al., 2002). However, very few papers have focused on psychological, motivational and work performance aspects of forest workers (e.g., Tsioras, 2010, 2012). The World Wide Fund (WWF) rangers' survey of Asian forest workers (WWF and RFA, 2016) concluded that 77% rangers get to spend less than 10 days a month with their families, 74% believe equipment are required for safety and 30% reported low pay, staying away from family, poor facilities, and dangerous working conditions as the worst aspects of their job. They reported that their joy in the job, closeness to nature, and poor alternate opportunities of employment are the major reasons to stay back in the job. In a survey of 530 rangers working in 39 conservation areas in 11 Asian countries, Moreto et al. (2017) studied the desire of rangers to see their children become rangers. They found that extrinsically motivated rangers were in favour of their children entering the same profession whereas intrinsically motivated rangers were concerned about the limitation of work conditions. While analysing protection of forest areas in India, Robinson et al., (2010) concluded that enforcement challenges include "underfunded enforcement agencies, underpaid staff with incentives that differ from those who set the rules, and inefficient institutions. Protection efforts are further complicated by poverty and resource dependence, low penalties, relatively high costs of enforcement, and conflict between managers and rural people's needs" (p. 36).

Belhekar, Bhatkhande, Paranjpye and Chavan (2019) reported study on 'Assessing Work Motivation of Forest Guards' from Maharashtra. They used psychological measures, computer-based measure of Implicit Association with workplace, Safety questionnaire for the assessment of a random sample of 61 forest guards. They reported that Education, Sense of Achivement, Perception of Policies and

available equipment are important predictors of connectedness with the work environment. They suggested HR interventions, financial incentive compatibility, and psychological health support as some of the key recommendations. The forest department of Government of Maharashtra has now started taking steps to address the concerns raised in the study (DNA, 2019).

3.4 Need for this study

Systematic studies of motivational and psychological aspects of forest guards in India are lacking. Previous work done in India has focused on theoretical analysis or qualitative data of forest guards. Vasan (2002) presented ethnography of the social and professional life of forest guards in Himachal Pradesh to suggest useful changes in implementation of forest policies in India. Nowlakha (2017) reported a theoretical analysis based on anecdotal account and macro level data, which stated some issues faced by forest guards. They include staff shortage, isolation and poor access of camps, drinking water, conflict situations, etc. Both the datasets are either small and non-representative, or anecdotal. As a result, the analysis lacks robustness and fails to give solutions that are replicable. Comparatively, Ojha and Gairola (2014) presented a quantitatively better account of job performance of forest guards in India. They studied task and contextual performance, and reported positive impact of task orientation and intrinsic motivation, strong negative impact of job stress, and moderate negative impact of hygiene factors on task performance. In addition, for contextual performance, they reported moderate positive impact of success orientation and negative impact of job stresses. They found that job satisfaction was not related to task or contextual performance. Their analysis suffers from multicollinearity issues, limitations of non-random samples, and social desirability response set because the data was collected by the Principal Chief Conservator of Forests.

4. THE STUDY

4.1 Present work

The present study was designed considering the importance of Hygiene factors, Motivators, Organisational Commitment, Psychological Well-being, Implicit Association with work environment, and Job Characteristics for duties performed by forest guards. Forest guards work in extreme and challenging conditions. The forest being their primary work environment, association with forest is an important determinant of their work performance. The self-reported measures of association typically suffer from problems of social desirability. Hence, the Implicit Association Test protocol is adapted for this purpose (Greenwald & Banaji, 1995). Such association measures have not been employed in studies of the forest workers anywhere in the world. The present study evaluates Work Motivation, Job Characteristics, Organisational Commitment, Perception of Safety, availability and functionality of equipment, and other demographic variables as predictors of Psychological Well-being.

4.2 Study design

The study collected data from 242 forest guards. It was ensured that every circle, range and tiger reserve was represented in the study. 40% of the forest guards serving in anti-poaching camps were sampled from each tiger reserve namely, Pench (n = 18), Kanha (n = 62), Sanjay-Dubri (n = 25), Satpura (n = 52), Bandhavgarh (n = 45) and Panna (n = 40).

The anti-poaching camps were selected from each tiger reserve using stratified random sampling. The sample was stratified according to the each circle in every forest range of their current posting. The list of all forest guards for every range was acquired and 25% were randomly selected in each range. In most of the cases, the forest guards responded to the scales at their anti-poaching camps. Psychological tests, computerised techniques for measurement of Cognitive Association with work conditions, survey questionnaire, and secondary data from WCT database mentioned below were used:

Minnesota Satisfaction Questionnaire: A 5-point Likert-type scale of the short version of Minnesota Satisfaction Questionnaire developed by Weiss et al. (1967) was used. The Minnesota Satisfaction Questionnaire has been widely used and has excellent psychometric properties, which include coefficient alpha and stability over time. It is adapted in various languages. The details are reported in Appendix 1.

Implicit Association Test: A Forest-IAT was developed for this survey by Dr. Vivek Belhekar, Associate Professor, Department of Applied Psychology, University of Mumbai. It is a computer program to assess the association with the forest which was built on OpenSesame 3.1 (Mathôt et al., 2012). The computerised psychological measure assesses the implicit association with forest. It provides as an output, the IAT D -score which is a standard normal variable, where higher score indicates positive association with forest. The details are reported in Appendix 8.

Organizational Commitment: Organizational Commitment questionnaire had 3 sub scales in it namely affective commitment, normative commitment, continuance commitment developed by Meyer and Allen's (1991) was used in the present study to measure Organizational Commitment of the forest guards. The details are reported in Appendix 3.

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Job Characteristic Scale: Job Characteristics Scale consisting of sub scales for Skill Variety, Task Identity[1], Task Significance[2], Autonomy, Feedback was used (Hackman and Oldham 1975). The model measures the presence of these factors and the need of these factors for better work performance of the employees. The details are reported in Appendix 4.

Survey Questionnaire: The Survey Questionnaire included demographic variables like education, years of service, and age. Education was reported as the number of years spent in formal education in India and years of service as the number of years employed in the forest department as a forest guard.

Safety Questionnaire (SQ): An eight-item scale was developed for the purpose of this research by psychologists from the Department of Applied Psychology, University of Mumbai. The questions were evaluated by psychologists and conservationists for their relevance and only questions of high-relevance were retained. The details are reported in Appendix 2.

Based on previously collected data from Maharashtra, psychologists from the University of Mumbai developed the following scales which were administered in this survey (Belhekar et al., 2019).

Resilience scale: Resilience leads to better coping and the work of the forest guard is stressful and requires coping. Hence the resilience scale was used. The details are reported in Appendix 6.

Value scale: Value scale is a psychological inventory that governs values that describe how individuals live their lives. In order to understand various factors including intrinsic and extrinsic that affects the work motivation of forest guards' value scale was administered (Schwartz et al., 2012). The details are reported in Appendix 5.

Well-being: Well-being is an important factor for psychological and physical health. This scale was used to understand the state of the well-being of forest guards. The details are reported in Appendix 7.

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[1] Task Identity refers to the observable outcomes of a job done from the beginning to the end.
[2] Task Significance refers to the knowledge that the job at hand has impacts on other lives as well.

5. RESULTS

The data was analysed using qualitative and quantitative approaches. For the quantitative analysis, the data was screened for statistical outliers, missing values, reliability of psychological measures and other statistical aberrations. Descriptive analysis was used to identify broad trends in the data and specify models using Classification and Regression Trees and factor analysis. The findings are reported below:

**Quantitative analysis: Comparisons of tiger reserve on various Psychological Attributes**

The six tiger reserves were grouped into two using supervised algorithms on the data. The groupings based on four parameters **Well-Being, Association with the forest, Supervisor Feedback** and **Work Satisfaction** grouped Kanha, Bandhavgarh, Panna Tiger Reserves together (Group 1) and Sanjay-Dubri, Satpura, Pench Tiger Reserves (Group 2) as a another group. The first set being popular tiger reserves with a lot of civil society pressure, media vigilance, higher probability of tiger sightings and psychological attributes as compared to the second set of tiger reserves. These aspects affect the work of the guards and it reflects in the data as well.

1. **Work Satisfaction:** Minnesota Satisfaction Questionnaire measures satisfaction of the employees at the work place. It provides information on specific aspects of work motivation. Overall Group 2 tiger reserves are more satisfied with their work compared to guards from Group 1. Forest guards from Group 1 have a lot of pressure owing to the factors mentioned above. Comparing work pressures, Group 2 tiger reserves have reported being satisfied with their job by a high margin. High levels of work pressure lead to lack of satisfaction.
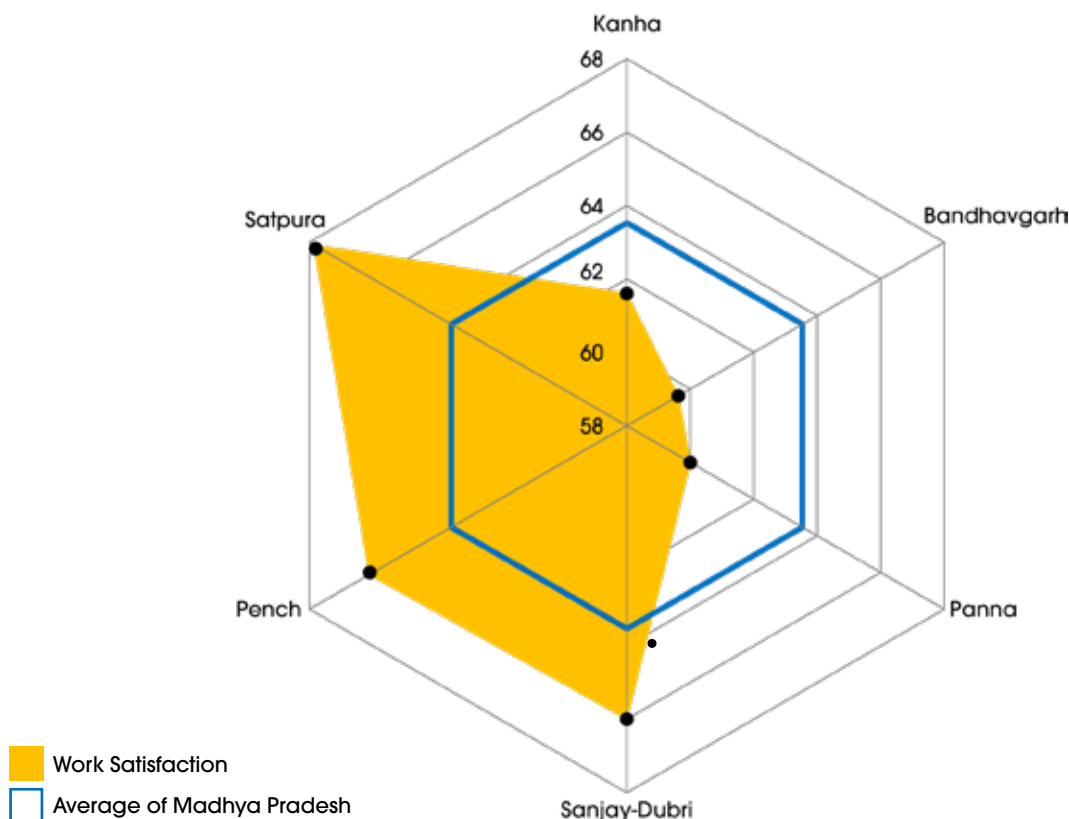

Note: The average association of forest guards with work/workplace in Madhya Pradesh was positive. The comparisons within parks are relative to each other.

2. **Well-being:** Psychological well-being consists of good psychological health, better quality of life and meaning or purpose in life. Guards from tiger reserves in Group 2 have scored higher on well-being compared to guards from Group 1. The high work pressure reflects better on work performance but it does not reflect positively on well-being.

Well-being
Average of Madhya Pradesh
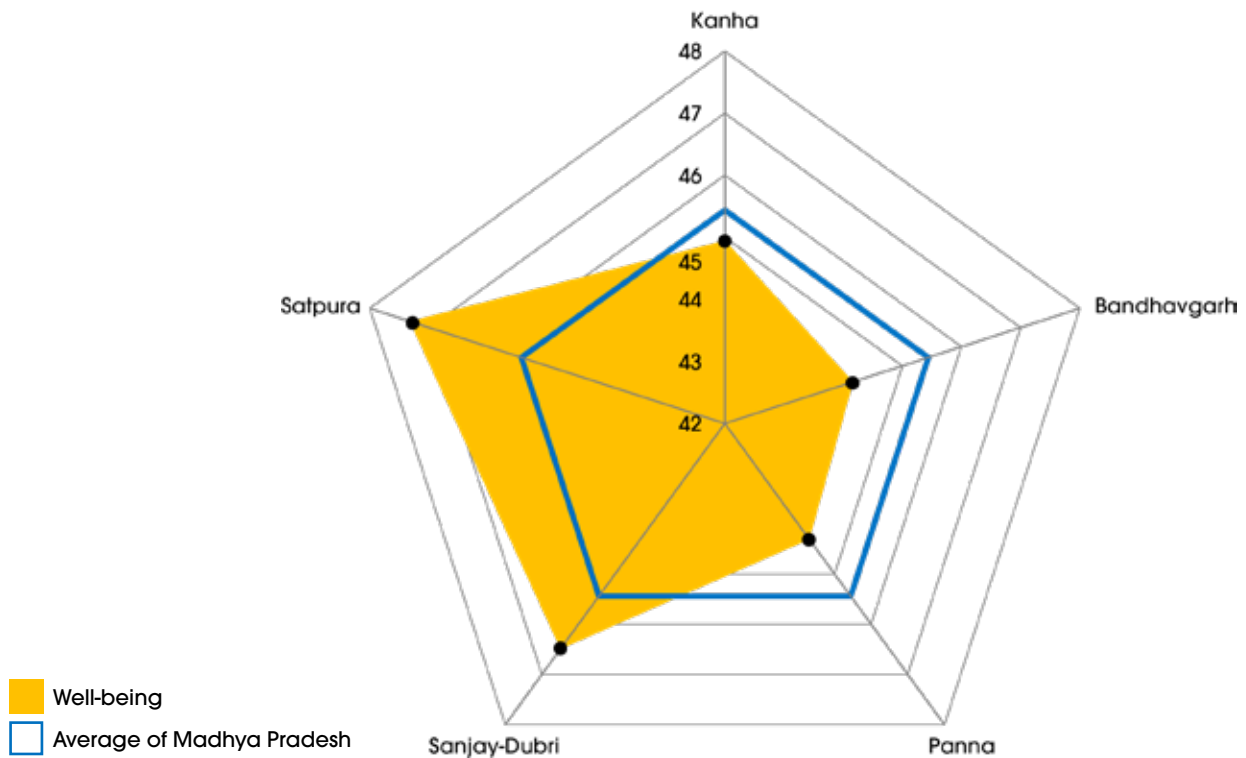
3. **Feedback:** This refers to receiving feedbacks given by superior officers on the work done by the employee. The feedback needs to be clear, specific, detailed, with actionable information about the effectiveness of his or her job performance. It provides knowledge about results of one's work performance. Guards from Group 2 have reported receiving feedbacks more than guards from Group 1.


Feedback
Average of Madhya Pradesh
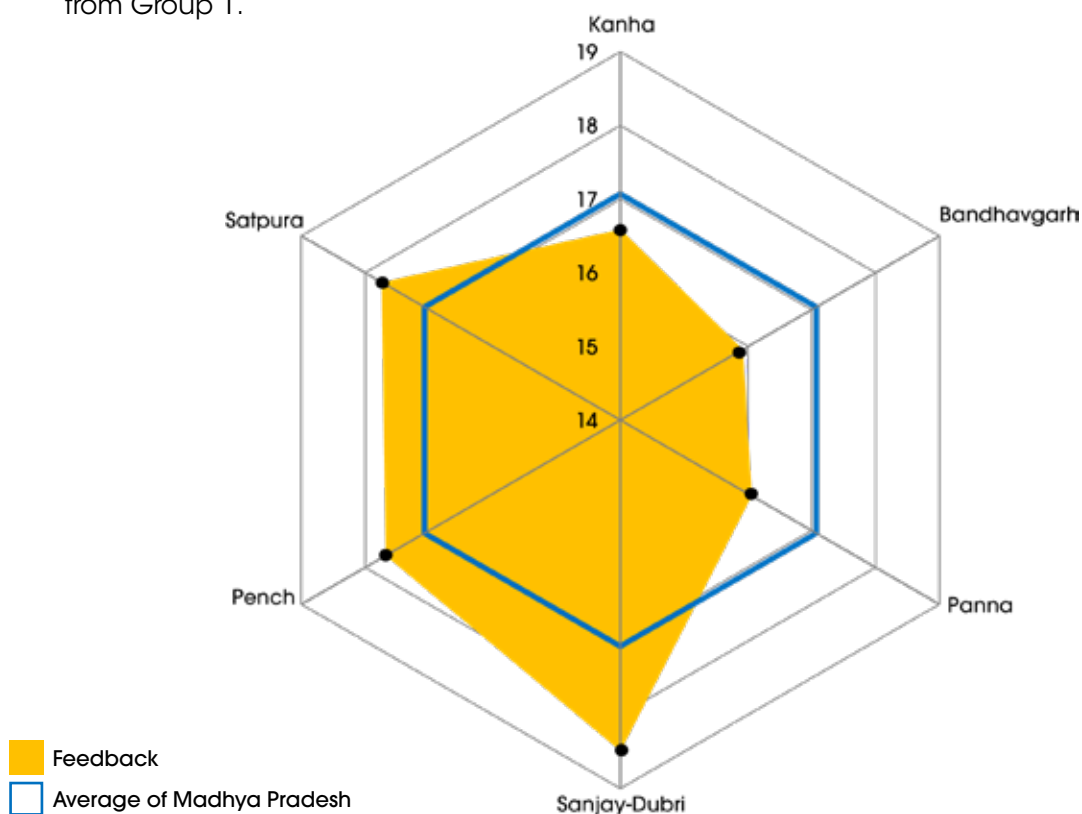
4. **Association with work:** Implicit Association Test measures association with the work environment. The higher score indicates that the guard has positive association with the work environment. Overall, all guards from have positive association with the work environment. The relative comparison reveals that, guards from Group 1 have a stronger association with the forest compared to guards from Group 2. The forest guards with higher association with the work are appointed to these parks. This could be because of the selection strategy. Guards from Bandhavgarh Tiger Reserve and Kanha Tiger Reserve have the highest positive association with their work environment compared to other tiger reserves. The guards from Pench, Sanjay-Dubri, Satpura and Panna Tiger Reserves have relatively lower association with the work.
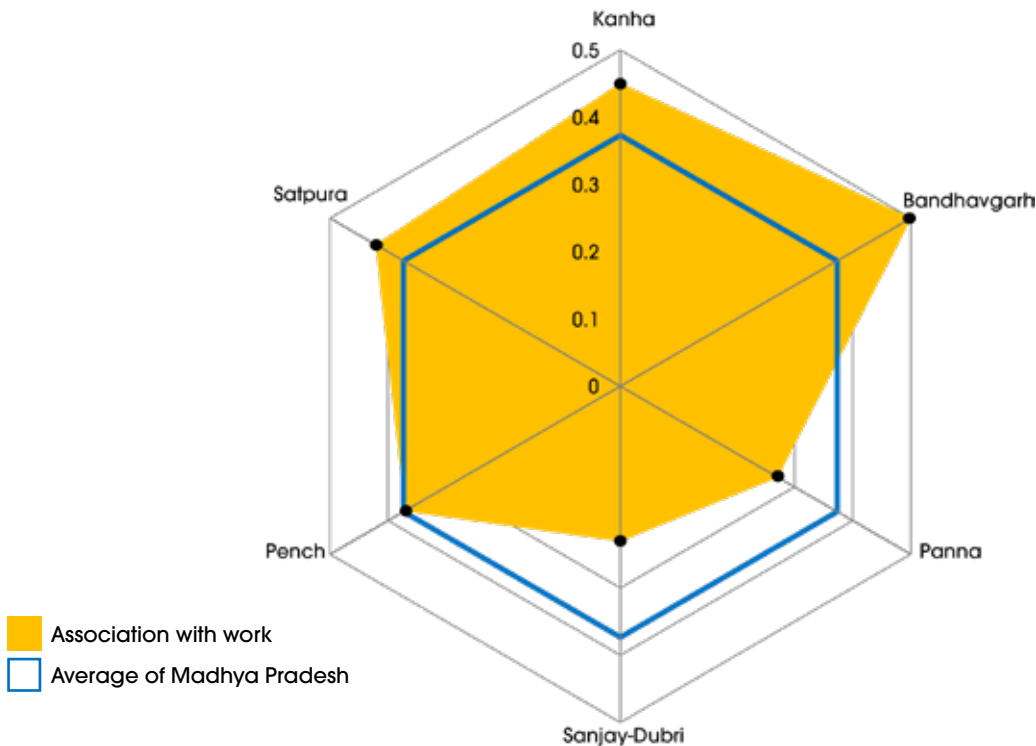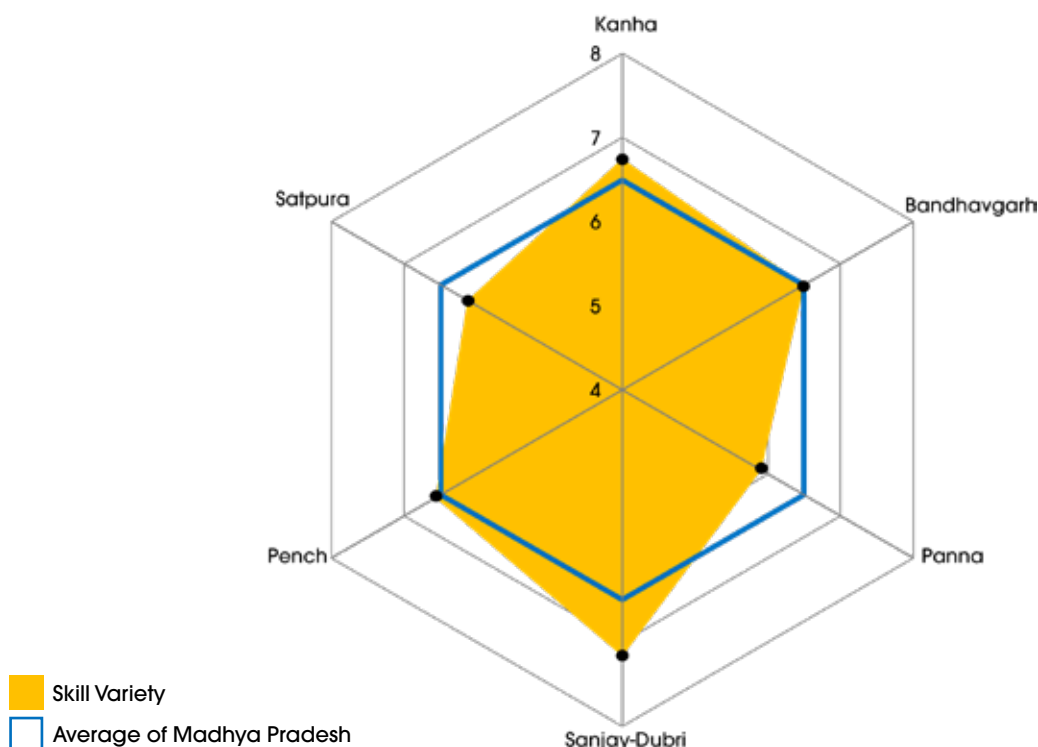

5. **Task Identity:** Task Identity refers to one completing the job from start to end. Guards from Kanha, Bandhavgarh and Sanjay-Dubri have reported high Task Identity compared to Panna, Pench and Satpura.
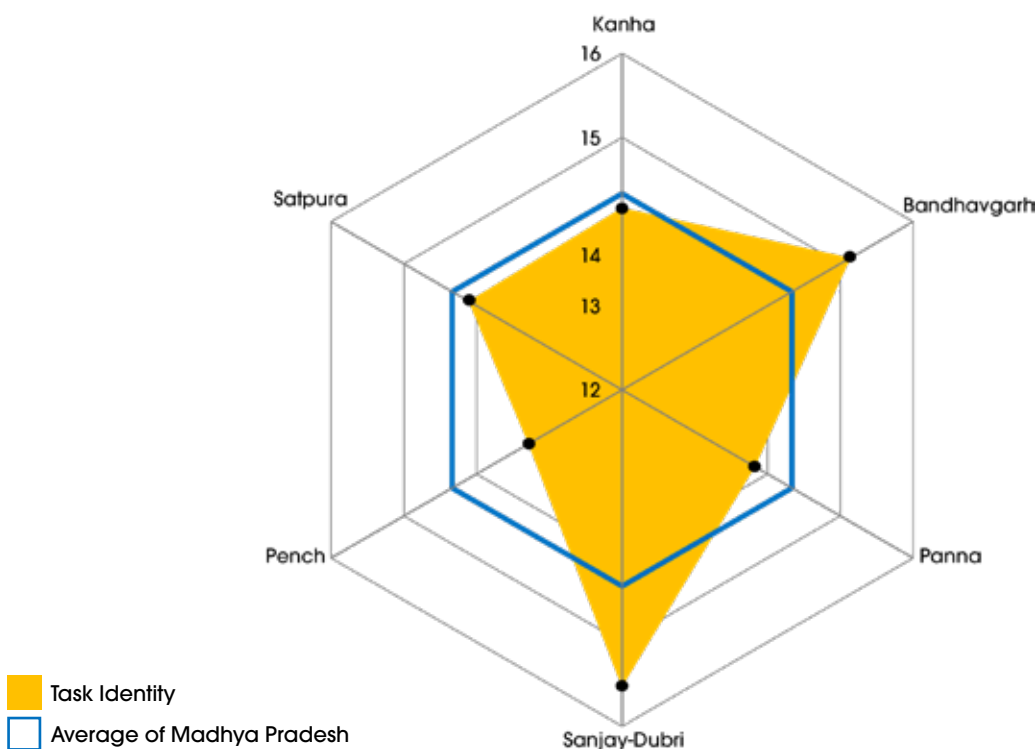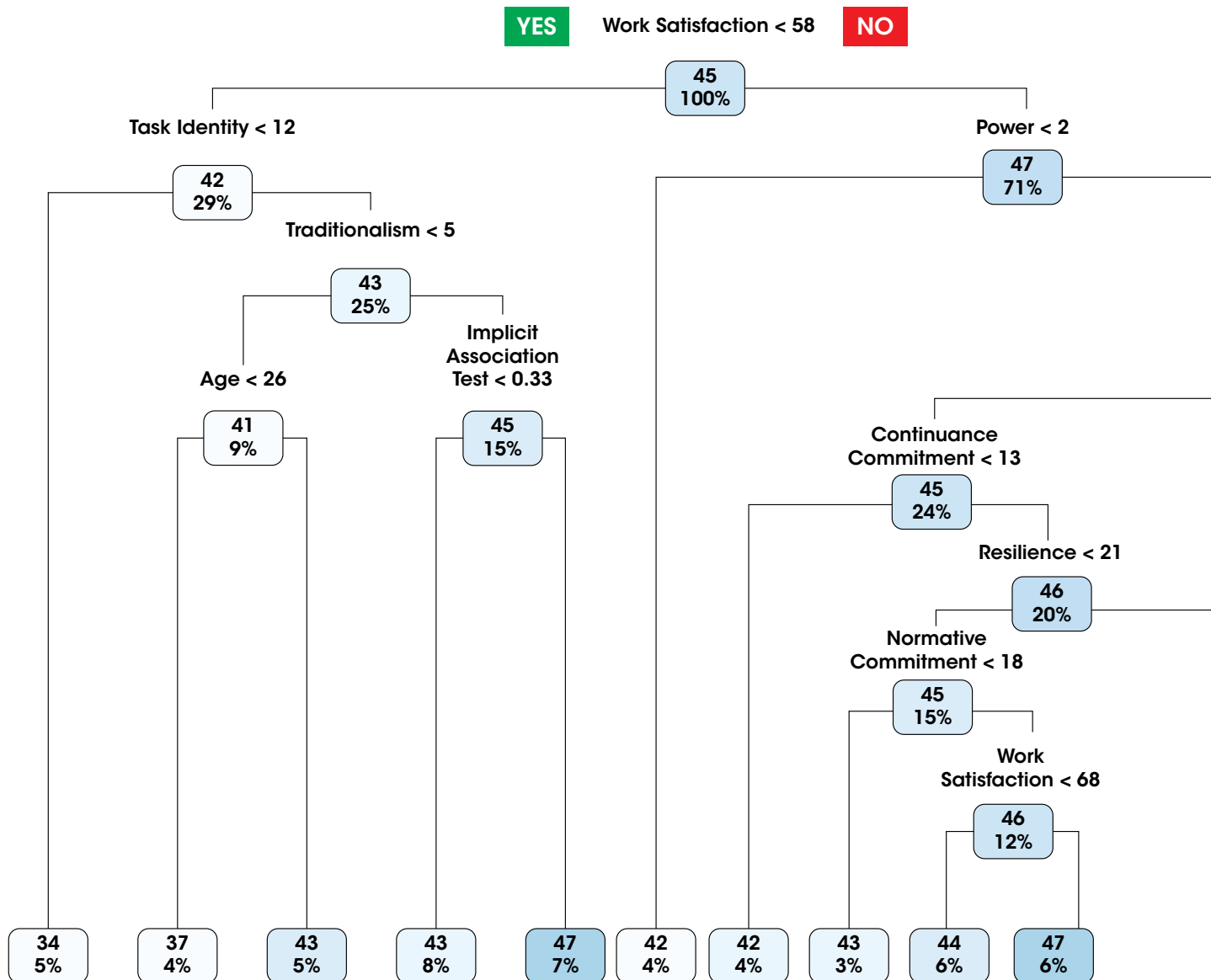
6. **Task Significance:** Task Significance refers to the individual's perceived meaningfulness of his own work. Kanha, Bandhavgarh and Panna have reported high Task Significance compared to Pench and Satpura but guards from Sanjay-Dubri Tiger Reserve have reported the highest Task Significance. The findings from Sanjay-Dubri may be due to the up and coming nature of the tiger reserve.

Task Significance
Average of Madhya Pradesh
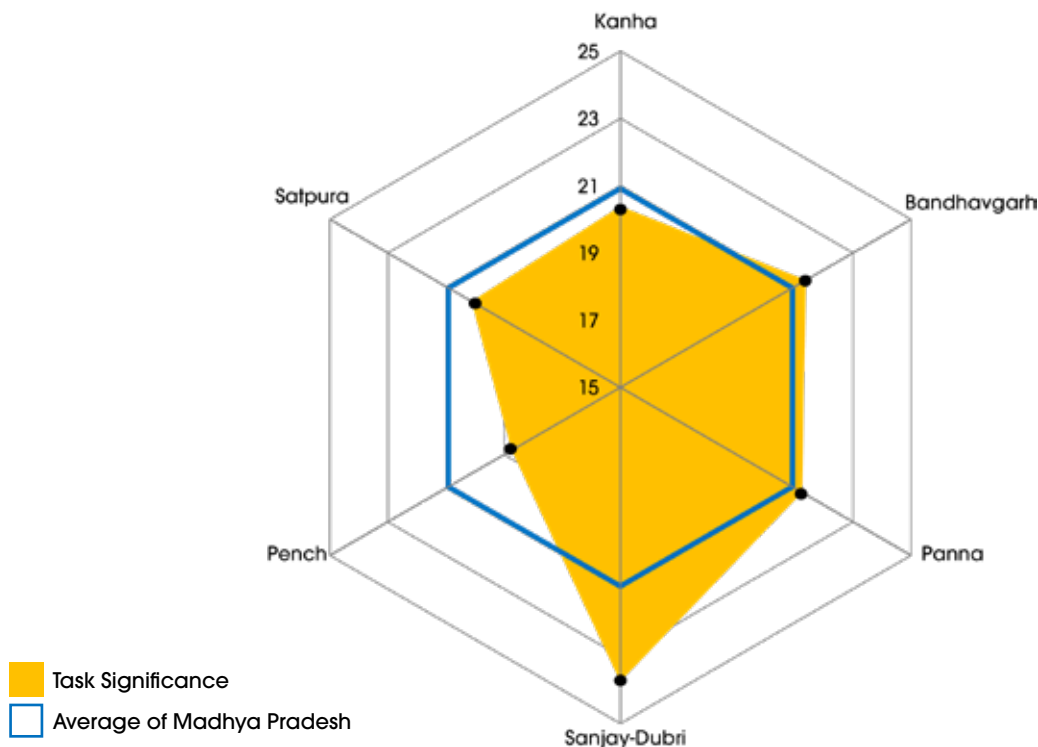
7. **Skill Variety:** Skill Variety is the perception of the employees about using the different skills they possess at work. It refers to feeling of the forest guards that the job they are doing makes/does not make the most of the skills they have. Guards from Group 1 reported presence of Skill Variety on the job compared to guards from Group 2. Guards from Sanjay-Dubri Tiger Reserve have reported highest Skill Variety compared to other tiger reserves. Sanjay-Dubri being a relatively new and under staffed tiger reserve the guards still require to play multiple roles, utilising a variety of skills compared to other tiger reserves.

Skill Variety
Average of Madhya Pradesh

Predicting well-being: Role of tiger reserves, psychological variables and human resource policies

Regression Tree

The Classification and Regression Tree models are effective predictive models using machine learning (Friedman, 2003). The tree-based machine learning algorithm is used to predict the well-being of the forest guards. The tree-based model developed hierarchical, importance-wise top-down structure of variables that are best predictors of well-being. The results show that Work Satisfaction is best predictor. The Work Satisfaction value less than 58 is major reason for the low well-being. Almost 30% of the forest guards are in this category. The moderate scores are those who have higher than 58 score on Minnesota Satisfaction Questionnaire, have higher value of Power, low on Task Identity, Continuance Commitment and Work Satisfaction < 63. Almost 45% of forest guards are in this group and belong to socially disadvantaged groups. Whereas individuals not belonging to socially disadvantaged groups report better well-being. The guards having a greater feeling of safety and not belonging to Kanha, Bandhavgarh and Panna are generally high on well-being.

Caste = 1, 2

| 47 |
| 66% |

Task Identity < 16

| 47 |
| 46% |

Safety < 63

| 49 |
| 20% |

Work Satisfaction < 64

| 48 |
| 22% |

Tiger Reserve =
Bandhavgarh, Kanha, Panna

| 50 |
| 17% |

Feedback < 21

| 49 |
| 14% |

Traditionalism < = 7

| 50 |
| 9% |

Confirmity < 8

| 48 |
| 11% |

| 49 | 45 | 47 | 51 | 52 | 46 | 49 | 49 | 52 |
| 5% | 8% | 7% | 4% | 3% | 3% | 8% | 4% | 5% |
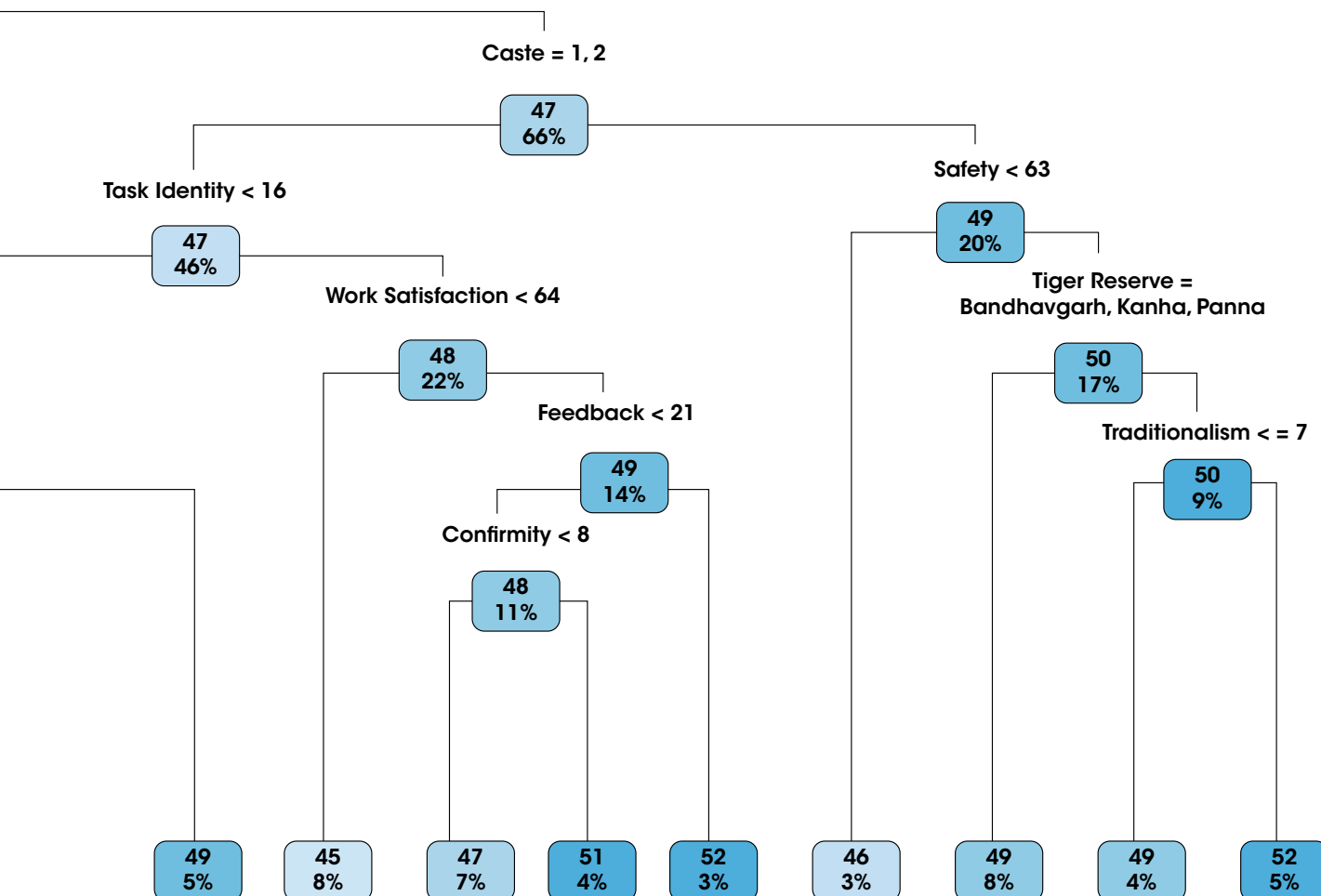
Qualitative analysis

This section reports the qualitative analysis of the interviews of the forest guards. The interviews were analysed using thematic analysis technique.

Thematic analysis

Along with the quantitative data in-depth interviews were also conducted. The interviews were conducted one-on-one. Qualitative data analysis is popularly used in psychology and other sciences for establishing the in-depth information in interview, case study forms. Thematic analysis is one such technique is generally used in qualitative data analysis. Thematic analysis is a method used to identify different themes emerging from the data. (Braun, 2006)

The in-depth qualitative interviews unfold themes like the uncertainty about the family and children's

future. The guards are required to stay away from their family for their duty. The guards reported missing their family and uncertainty about the future of their children. Schooling and basic growth of the children usually takes place in absence of the guard. Not being present for such occasions for the family created a sense of worry in the forest guards. Staying away from family and being unable to spend time with the family members was also emerged strongly in the themes. Guards even reported that the facilities like higher education and health care for the family members were expensive for the guards to afford from their salaries. Guards working in core zones who have minimum human contact reported the need for more human interactions. The guards compared their duty and jobs to forces like police and defences, which were considered to be respected with more protection, compared to a guard's job. Being guided and under a lot of pressure guards are expected to work dutifully by their superior officers. Some of them reported not receiving desired additional support from their superiors in case of emergency which they believed is essential for the sort of duties they have.

6. LEARNINGS AND POLICY IMPLICATIONS

The results across tiger reserves can be understood on a two dimensional matrix of (a) Association with Work (b) Well-being and Work Satisfaction.

Generally, a well-functioning organisation would require **High Engagement and High-Performance culture**. The 'Association with Work' is indicative of potential performance parameter. The 'Well-being and Work Satisfaction' is indicative of potential employee engagement. In case of Madhya Pradesh forest guards, the good news is that NONE of the parks are low on both and relatively bad news is that NEITHER of them are high on both.

		Work Satisfaction and Well-being (indicative of Employee Engagement)		
		High	Moderate	Low
Association with Work (Potential Performance)	High		Kanha	Bandhavgarh
	Moderate	Satpura, Pench		Panna
	Low	Sanjay-Dubri		

The Group 1 TRs (Kanha and Bandhavgarh in particular) are high on 'Association with Work' which means that they are likely to deliver better performance. They are low on Work Satisfaction and Well-being. This clearly suggests that the risk of the 'burn-out' is very high for these employees. The Group 2 TRs are low on 'Association with Work' indicative of performance issues. However, they are high on aspects Work Satisfaction and Well-being. It clearly indicates higher levels of employee engagement.

There is need to change this situation. Policy level changes as well as psychological and human resource interventions are required for this.

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The study sketched out a few data-based policy implications that are stated below:

1. **Staff quarters, schools for children till higher secondary and healthcare facilities:** The nature of forest service deprives the forest guards of time with their families. Further, modes of connectivity are hampered by the remoteness of their workplace and lack of electricity. In their perception, the forest guards from other divisions of the forest department (Production, R & E) do not face as many challenges. Inability to take care of the family and look after the progress of their children is a major source of frustration and lower levels of health and well-being. Concerns about the family can be addressed by following interventions:

    A) Staff quarters: The forest guards' families need to be provided with accommodation near the tiger reserve. Centrally located staff colonies developed on the lines of police colonies can help the guards meet their family members more often and also enable provision of other facilities especially schools and healthcare.

    B) Schools for children till higher secondary: Each of the tiger reserves should have facilities of schools till higher secondary level for children of the forest guards. The iconic parks like Kanha and Bandhavgarh can take the lead by setting up a world class schools which can be a model for tiger reserves all over India.

    C) Healthcare facilities: Access to quality healthcare facilities for the guard and his family within the staff colony should be provided.

2. **Improvements in human resource management:** It is important that the management of forest guards by their supervisors is improved. Decision-making competence of supervisors, following a collectivist process of decision-making, and giving limited autonomy are some strategies central to the supervisors. This can be achieved through a training programme that incorporates findings of this study along with established human resource practices for Range Forest Officers and Assistant Conservator of Forests.

3. **Feedback:** The data suggests that employees who received feedback about their performance were motivated to work. Timely feedbacks are integral part of the work progress. Positive feedbacks are motivators and negative feedbacks aid in course correction wherever required. Building capacities in the officers that supervise the guards on feedback mechanisms should be made a part of the human resource management training.

4. **Increase sense of achievement among forest guards:** Training and job profiling should be designed and modified so that it enhances the sense of achievement among forest guards. There is parity across all wings of Forest Departments in pay structures and opportunities of promotion. However, there is disparity in the work profiles of forest guards in different wings (Production, R and E). The relative difference in work profile in the same cadre creates perceptions of disparity. For wildlife wing forest guards, this causes lower sense of achievement, since it leads to downward social comparison. Data suggests that lower sense of achievement associated with the field of work improves only through provision of functional equipment and higher pay. Ensuring awards or praise from supervisors to be accorded in a social setting in the presence of the community can also enhance their sense of achievement. We recommend that improving training, achievement-orientated job profiling, community-based rewards, opportunity to have social status and recognition, training of Range Forest Officers and Assistant Conservators of Forests in human resource management, and working on perceived disparity are some of the important areas to be tapped to improve sense of achievement.

5. **Safety:** Training forest guards in basic first aid and enhancing their perception of safety will help increase the feeling of safety. The data suggests that the guards feel safe because of the equipment's that are provided to them. The current condition of the anti-poaching camps needs to be improved from a safety perspective e.g. better fencing for safety etc.

6. **Psychological health:** Since forest guards work in isolating and demanding work conditions, an institutional mechanism needs to be put in place for periodic monitoring of their psychological health. This may include medical and counselling facilities. This will help in assessing their psychological health and get timely aid.

7. **Social inclusion:** Attempts need to be made to normalise diversity and sensitisation of staff towards social inclusivity. Members from socially disadvantaged groups need creation of supportive social networks.

8. **Financial incentives:** We recommend effort-based financial incentives for the forest guards. We strongly support instituting a special wildlife allowance for all tiger reserves. Apart from this recognising the stress faced by the staff in the iconic parks a variable financial component linked to tourism should be paid.

9. **Work shifts and rotation in the job:** The data suggests that the guards who reported lack of skill variety were less motivated to their job. Skill variety refers to the variety of activities that requires using skills at work by an employee. Forest guards reported that there was lack of skill variety at the workplace. This emanates from the monotony of a 24 hour duty which might not make use of all the skill he/she possesses. Rotation of work profiles and having shift based work will aid skill variety and work-life balance this will aid work motivation.

10. **Inclusive decision making:** The lack of inclusive decision making can be seen in the data, where the guards have reported lack of Task Identity. The guards do not feel valued and important in the process of decision making. Including guards in decision making will aid their perception of Task Identity.

KANHA TIGER RESERVE

62 guards from the Kanha Tiger Reserve were surveyed on 108 parameters. Their responses were analysed using machine learning algorithms. This dataset is a part of the general model for wellbeing of guards in Madhya Pradesh reported earlier which are applicable to all tiger reserves. The model for Kanha Tiger Reserve highlighted Work Satisfaction, Feedback, Safety, Task Identity, and Continuance Commitment as significantly influencing the work motivation of the guards at Kanha.
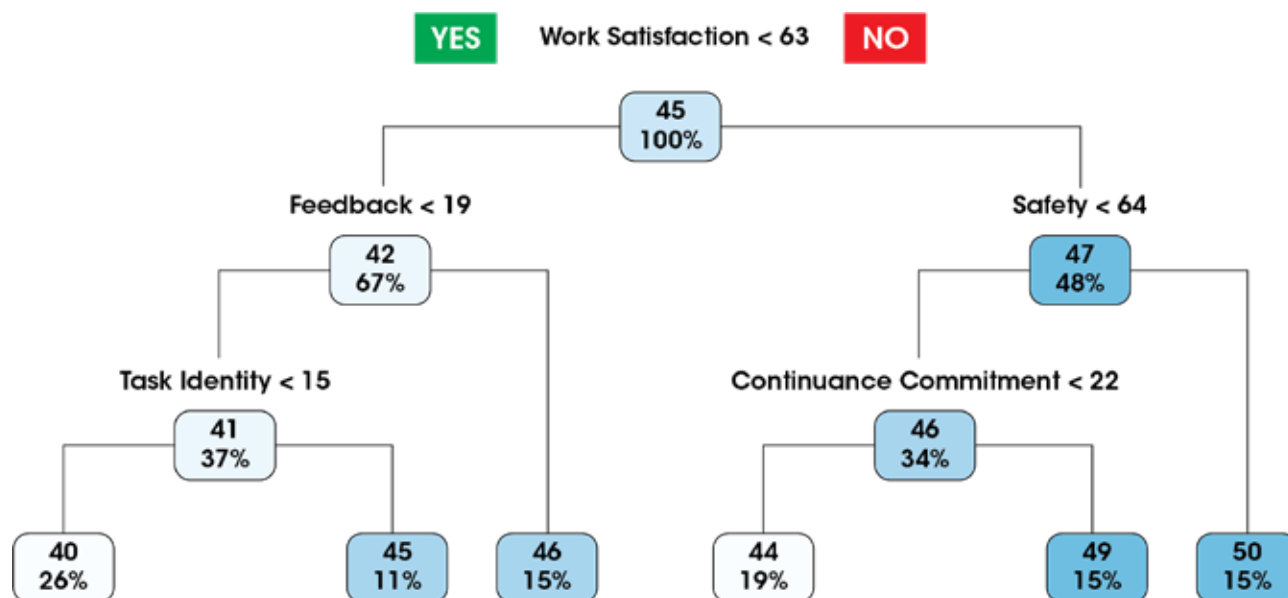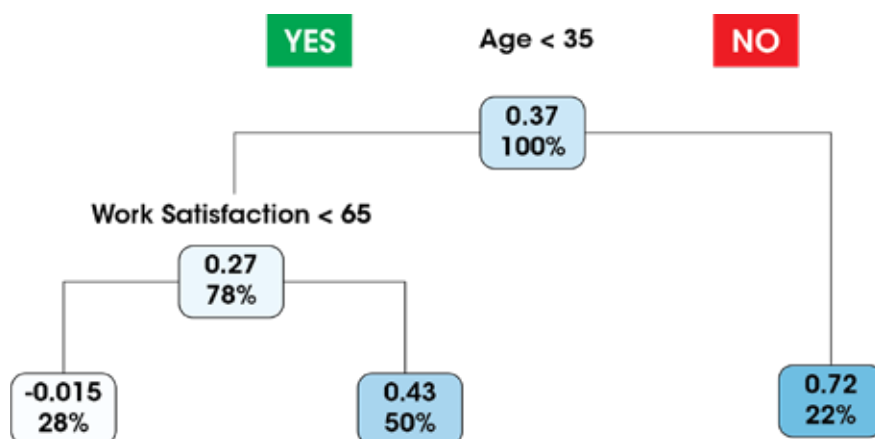

Based on the above results the critical interventions for Kanha Tiger Reserve are:

1. **Staff quarters, schools for children of forest guards and medical facilities:** Being an iconic park exerts a significant amount of work pressure the guards are under a tight work schedule. The guards get rare opportunities to visit family members and be present in case of emergency for them. Education and healthcare of the children and family being a primary concern for the forest guards' provision of staff quarters, schools for children of forest guards and emergency medical facilities is essential.

2. **Financial incentives:** We recommend effort-based financial incentives for the forest guards. We strongly support instituting a special wildlife allowance for all tiger reserves. Apart from this recognising the stress faced by the staff in the iconic parks a variable financial component linked to tourism should be paid.

PENCH TIGER RESERVE

18 guards from the Pench Tiger Reserve were surveyed on 90 parameters. Their responses were analysed using machine learning algorithms. This dataset is a part of the general model for wellbeing of guards in Madhya Pradesh reported earlier which are applicable to all tiger reserves. The model for Pench Tiger Reserve highlighted Work Satisfaction emanating from their job profile, supervisors, pay and being able to serve the people significantly influencing how the forest guard associates with his work place. The younger guards associate significantly lesser with their jobs than the older ones in Pench.

Based on the above results the critical intervention for Pench Tiger Reserve are:

1. **Increase sense of achievement among forest guards:** Training and job profile should be designed and modified so that it enhances the sense of achievement among forest guards. Data suggests that lower sense of achievement associated with the field of work improves only through provision of functional equipment and higher pay. Ensuring awards or praise from supervisors to be accorded in a social setting in the presence of the community can also enhance their sense of achievement.

   We recommend that improving training, achievement-orientated job profiling, community-based rewards, opportunity to have social status and recognition, training of Range Forest Officers and Assistant Conservators of Forests in human resource management, and working on perceived disparity are some of the important areas to be tapped to improve sense of achievement.

SATPURA TIGER RESERVE

52 guards from the Satpura Tiger Reserve were surveyed on 108 parameters. Their responses were analysed using machine learning algorithms. This dataset is a part of the general model for wellbeing of guards in Madhya Pradesh reported earlier which are applicable to all tiger reserves. The model for Satpura Tiger Reserve highlighted Autonomy, Task Significance and Safety as significantly influencing the work motivation of the guards at Satpura.
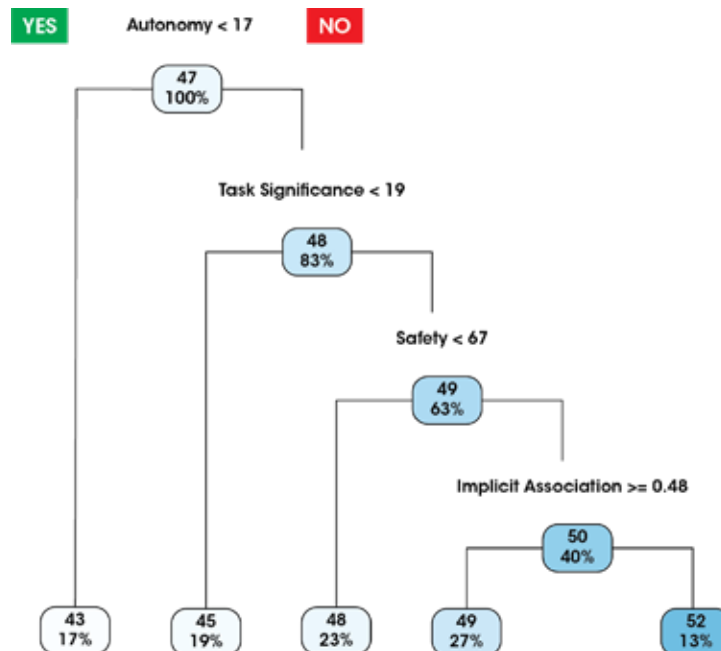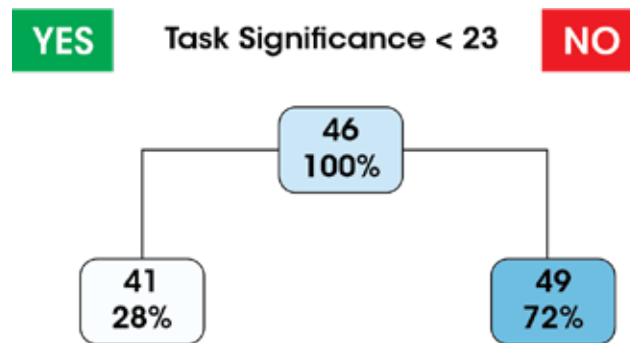

Based on the above results the critical interventions for Satpura Tiger Reserve are:

1. **Inclusive decision making:** The insufficient inclusive decision making can be seen in the data, where the guards have reported lack of Task Identity. The guards do not feel valued and important in the process of decision making. Including guards in decision making will aid their perception of Task Identity.

2. **Increase sense of achievement among forest guards:** We recommend that improving training, achievement-orientated job profiling, community-based rewards, opportunity to have social status and recognition, training of Range Forest Officers and Assistant Conservators of Forests in human resource management, and working on perceived disparity are some of the important areas to be tapped to improve sense of achievement.

3. **Safety:** Training forest guards in basic first aid and enhancing their perception of safety will help increase the feeling of safety. The data suggests that the guards feel safe because of the equipment that are provided to them. The current condition of the anti-poaching camps needs to be improved from a safety perspective e.g. better fencing for safety etc.
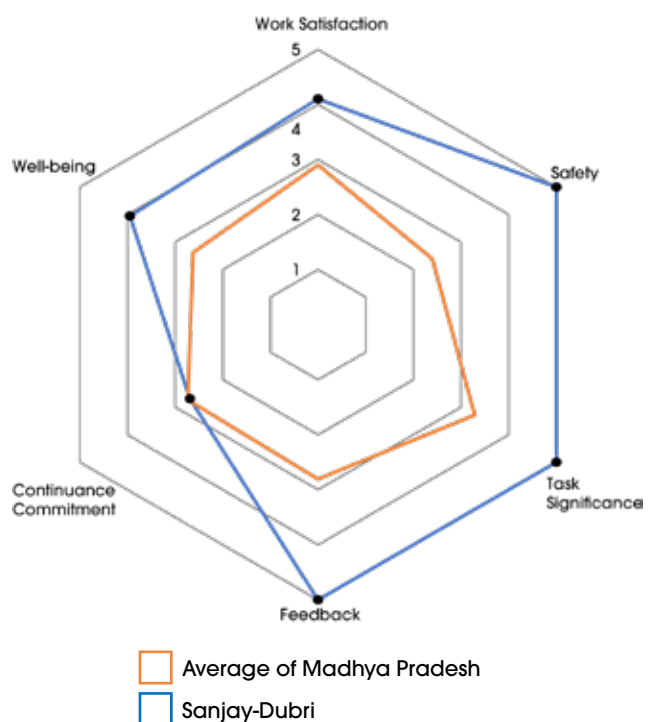
SANJAY-DUBRI TIGER RESERVE

25 guards from the Sanjay-Dubri Tiger Reserve were surveyed on 108 parameters. Their responses were analysed using machine learning algorithms. This dataset is a part of the general model for wellbeing of guards in Madhya Pradesh reported earlier which are applicable to all tiger reserves. The model for Sanjay-Dubri Tiger Reserve highlighted **Task Significance** which refers to the individual's perceived meaningfulness of his own work.

Based on the above results the critical intervention for Sanjay-Dubri Tiger Reserve are:
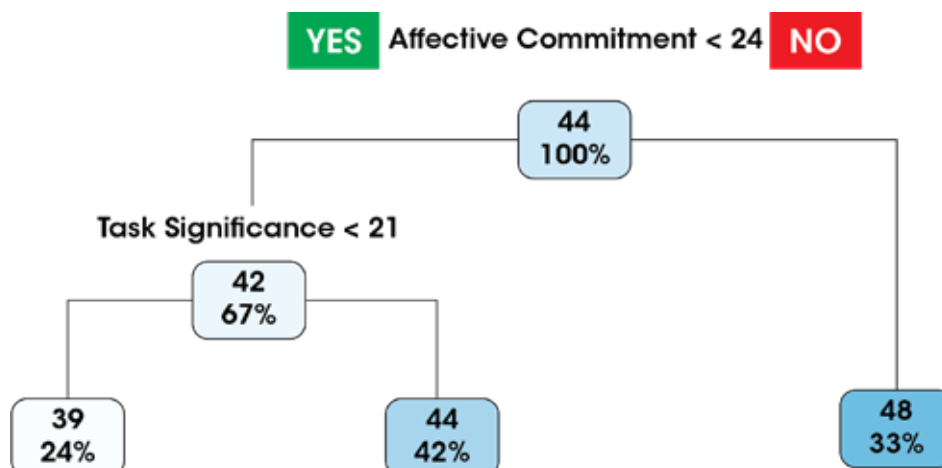
1. **Increase sense of achievement among forest guards:** Training and job profile should be designed and modified so that it enhances the sense of achievement among forest guards. Data suggests that lower sense of achievement associated with the field of work improves only through provision of functional equipment and higher pay. Ensuring awards or praise from supervisors to be accorded in a social setting in the presence of the community can also enhance their sense of achievement.

We recommend that improving training, achievement-orientated job profiling, community-based rewards, opportunity to have social status and recognition, training of Range Forest Officers and Assistant Conservators of Forests in human resource management, and working on perceived disparity are some of the important areas to be tapped to improve sense of achievement.

BANDHAVGARH TIGER RESERVE

45 guards from the Bandhavgarh Tiger Reserve were surveyed on 108 parameters. Their responses were analysed using machine learning algorithms. This dataset is a part of the general model for wellbeing of guards in Madhya Pradesh reported earlier which are applicable to all tiger reserves. The model for Bandhavgarh Tiger Reserve highlighted **Affective Commitment**, the feeling of wanting to work for the forest department, and **Task Significance** influencing how the forest guard associates with his work place.
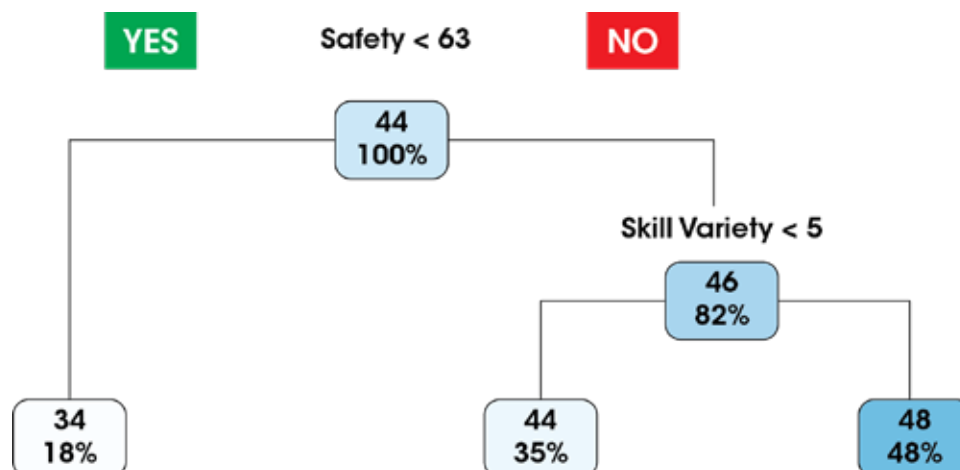

Based on the above results the critical interventions for Bandhavgarh Tiger Reserve are:

1. **Financial incentives:** We recommend effort-based financial incentives for the forest guards. We strongly support instituting a special wildlife allowance for all tiger reserves. Apart from this recognising the stress faced by the staff in the iconic parks a variable financial component linked to tourism should be paid.

2. **Increase sense of achievement among forest guards:** Training and job profile should be designed and modified so that it enhances the sense of achievement among forest guards. Data suggests that lower sense of achievement associated with the field of work improves only through provision of functional equipment and higher pay. Ensuring awards or praise from supervisors to be accorded in a social setting in the presence of the community can also enhance their sense of achievement. We recommend that improving training, achievement-orientated job profiling, community-based rewards, opportunity to have social status and recognition, training of Range Forest Officers and Assistant Conservators of Forests in human resource management, and working on perceived disparity are some of the important areas to be tapped to improve sense of achievement.

PANNA TIGER RESERVE

40 guards from the Panna Tiger Reserve were surveyed on 108 parameters. Their responses were analysed using machine learning algorithms. This dataset is a part of the general model for wellbeing of guards in Madhya Pradesh reported earlier which are applicable to all tiger reserves. The model for Panna Tiger Reserve highlighted **Safety and Skill Variety**, which is the perception of the employees about using the different skills they possess at work, as significantly influencing the work motivation of the guards at Panna.

Based on the above results the critical interventions for Panna Tiger Reserve are:

1. **Safety:** Training forest guards in basic first aid and enhancing their perception of safety will help increase the feeling of safety. The data suggests that the guards feel safe because of the equipment that are provided to them. The current condition of the anti-poaching camps needs to be improved from a safety perspective e.g. better fencing for safety etc.

2. **Work shifts and rotation in the job:** The data suggests that the guards who reported lack of skill variety were less motivated to their job. Skill variety refers to the variety of activities that requires using skills at work by an employee. Forest guards reported that there was lack of skill variety at the workplace. This emanates from the monotony of a 24 hour duty which might not make use of all the skill he/she possesses. Rotation of work profiles and having shift based work will aid skill variety and work-life balance this will aid work motivation.

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APPENDIX 1

Minnesota Satisfaction Questionnaire

1. Being able to keep busy all the time
2. The chance to work alone on the job
3. The chance to do different things time to time
4. The chance to be somebody in the community
5. The way my bosses handle their work/workers
6. The competence of my supervisors in making decisions
7. Being able to do things that go against my conscience
8. The way my job provides steady employment
9. The chance to do things for other people
10. The chance to tell people what to do
11. The chance to do something that makes use of my abilities
12. The way government policies are put into practice
13. My pay and amount of work I do
14. The chance of advancement in your job
15. The freedom to use my own judgment
16. The chance to try my own methods to do the job
17. The work conditions
18. The way co-workers get along with each other
19. The praise I get for doing a good job
20. The feeling of accomplishment I get from the job

APPENDIX 2

Safety Questionnaire

1. I think that the work condition is safe
2. The equipment provided make the work condition safe
3. The safety depends on our behaviour
4. I often feel scared/ tense about the safety
5. Safety depends on equipment provided
6. Safety is unpredictable
7. Attempts need to be made to make work conditions safe
8. Attempt need to be made to make work conditions comfortable
9. Working in forest is dangerous because of Wild animals
10. Working in forest is dangerous because of conflict with Villagers
11. Working in forest is dangerous because of Poachers
12. Working in Jungle is completely unsafe
13. Safety should be given highest priority
14. Safety equipment are most essential for guards
15. Equipment are not very useful in dangerous situations
16. Following the safety rules increases safety
17. Workplace should be more comfortable
18. Comfort is more important
19. Following the safety rules increases safety
20. Taking precautions increases safety
21. What has to happen shall happen
22. Our safety is in our control

APPENDIX 3

Organizational Commitment

1. I would be very happy to spend the rest of my career in this organization
2. I really feel as if this organization's problems are my own
3. I do not feel like 'part of my family' at this organization
4. I do not feel 'emotionally attached' to this organization
5. This organization has a great deal of personal meaning for me
6. I do not feel a strong sense of belonging to this organization
7. It would be very hard for me to leave my job at this organization right now even if I wanted to
8. Too much of my life would be disrupted if I leave my organization
9. Right now, staying with my job at this organization is a matter of necessity as much as desire
10. I believe I have too few options to consider leaving this organization
11. One of the few negative consequences of leaving my job at this organization would be the scarcity of available alternative elsewhere
12. One of the major reasons I continue to work for this organization is that leaving would require

considerable personal sacrifice

13. I do not feel any obligation to remain with my organization

14. Even if it were to my advantage, I do not feel it would be right to leave

15. I would feel guilty if I left this organization now

16. This organization deserves my loyalty

17. I would not leave my organization right now because of my sense of obligation to it

18. I owe a great deal to this organization

APPENDIX 4

Job Characteristic Model

1. This job required me to use different skills

2. I can use different talents in this job

3. I am not happy about different activities that are required in this job

4. This job is boring because it involves doing same thing again and again

5. This job does not require the use of my abilities

6. I know the outcome of my and others work

7. I am involved in all process and planning of the job

8. I am only involved in my part of process

9. My job is useful for others

10. Whatever I do, our work shall not make other people's life better

11. I have a freedom to choose my way of working

12. I can decide the procedure of doing the work

13. I am responsible for designing my own methods

14. I get complete instructions from boss and have to work exactly accordingly

15. I get clear feedback about effectiveness of my performance

16. I get to know the results of my performance

17. I believe that this work is meaningful

18. I like that this work is useful to everyone

19. I feel that I am a valuable person in this workplace

20. I am responsible for my work

21. I have no responsibility for any change in the outcome

22. I shall feel guilty if the work is not done completely

23. I am informed about how well I am doing

24. I am informed about the aspects in which I need to improve

APPENDIX 5

Value Scale

1. Power

2. Achievement

3. Hedonism

4. Stimulation

5. Self-Direction

6. Universalism

7. Benevolence

8. Tradition

9. Conformity

10. Security

APPENDIX 6

Resilience

1. I tend to bounce back quickly after hard times

2. I have a hard time making it through stressful events

3. It does not take me long to recover from stressful event

4. It is hard for me to snap back when something bad happens

5. I usually come through difficult times with little trouble

6. I tend to take a long time to get over set-backs in my life

APPENDIX 7

Well-Being

1. I lead a purposeful and meaningful life

2. My social relationships are supporting and rewarding

3. I am engaged and interested in my daily activities

4. I actively contribute to the happiness and well-being of others

5. I am competent and capable in the activities that are important to me

6. I am a good person and live a good life

7. I am optimistic about my future

8. People respect me

APPENDIX 8

Forest Implicit Association Test (IAT):

A Forest IAT was developed for this survey by Dr. Vivek Belhekar, University of Mumbai. The IAT paradigm is developed for measuring association (Greenwald & ca, 1995) and individual differences in cognition (Greenwald et al., 1998). The IAT paradigm has been used for developing a Forest IAT which was built on Opensesame 3.1 (Mathôt et al., 2012). The technique of improved scoring algorithm (Greenwald et al., 2003) was used to obtain D-score, which is a standard normal random variable.

The IAT has been presented on a computer. Typically, an IAT consists of seven tasks. The same has been adapted for Forest IAT. There were twelve pictures that were classified into 'wildlife', 'domestic', 'happy', and 'sad' categories. The participant has to rapidly classify object(s) into categories by pressing either 'Z' or 'M' key. The first task involved classifying 'wildlife' and 'domestic' images into respective categories. The second task involved classifying images of 'happy' and 'sad' faces into respective categories. The third and fourth tasks involved pressing 'Z' key if image is either 'happy' or 'wildlife' and pressing 'M' if image is either 'domestic' or 'sad'. In the fifth task 'wildlife' and 'domestic' images were switched to 'M' key and 'Z' key, respectively. The sixth and seventh task involved pressing 'Z' key if the image is 'domestic' or 'happy' and 'M' key if image is 'wildlife' or 'unhappy'. The D-Score obtained on Forest IAT has been used as a dependent variable in the analyses.

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ABOUT WCT

Using the Tiger as a metaphor for all of nature, Wildlife Conservation Trust (WCT) was envisioned to preserve and protect India's rich natural heritage. Currently, WCT works in and around 160 Protected Areas across 23 states in the country covering 82% of India's 50 tiger reserves, 21% of the 769 Protected Areas and impacting a population base of approximately 3.5 million people. WCT works towards the mitigation of anthropogenic pressures through a robust and tested 360 degree approach with a firm belief in landscape-level conservation of both wildlife and their habitats, sustainably factoring in the needs of people dependent on these forests.

Wildlife Conservation Trust