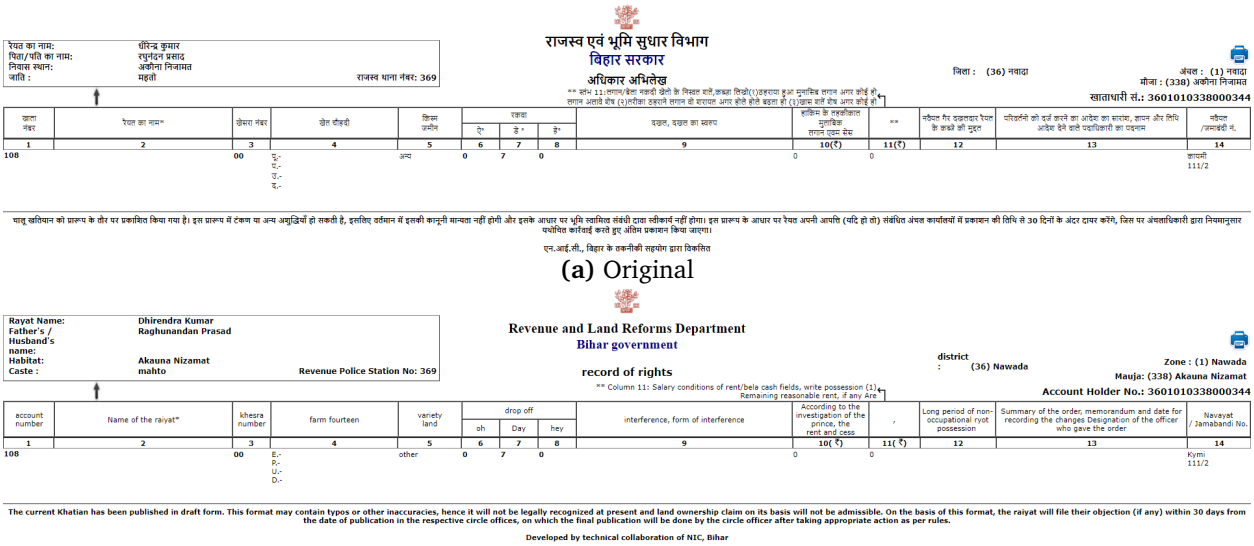
Unlanded: Distribution of Land in Bihar

October 2022

Abstract

1 Introduction



रैयत का नाम: धीरेन्द्र कुमार
पिता/पति का नाम: रघुनंदन प्रसाद
निवास स्थान: अकौना निजामत
जाति : महतो
राजस्व थाना नंबर: 369

राजस्व एवं भूमि सुधार विभाग
बिहार सरकार
अधिकार अभिलेख

जिला : (36) नवादा
अंचल : (1) नवादा
मौजा : (338) अकौना निजामत
खाताधारी सं.: 3601010338000344

खाता नंबर	रैयत का नाम*	खेसरा नंबर	खेत चौहदी	किस्म जमीन	रकबा			दखल, दखल का स्वरूप	हाकिम के तहकीकात मुताबिक लगान एवम सेस	**	नवैयत गैर दखलदार रैयत के कब्जे की मुद्दत	परिवर्तनी को दर्ज करने का आदेश का सारांश, ज्ञापन और तिथि आदेश देने वाले पदाधिकारी का पदनाम	नवैयत /जमाबंदी नं.
					ऐ*	डे *	हे*						
1	2	3	4	5	6	7	8	9	10(₹)	11(₹)	12	13	14
108		00	ए.- पं.- उ.- द.-	अन्य	0	7	0		0	0			कायमी 111/2

चालू खतियान को प्रारूप के तौर पर प्रकाशित किया गया है। इस प्रारूप में टंकण या अन्य अशुद्धियाँ हो सकती है, इसलिए वर्तमान में इसकी कानूनी मान्यता नहीं होगी और इसके आधार पर भूमि स्वामित्व संबंधी दावा स्वीकार्य नहीं होगा। इस प्रारूप के आधार पर रैयत अपनी आपत्ति (यदि हो तो) संबंधित अंचल कार्यालयों में प्रकाशन की तिथि से 30 दिनों के अंदर दायर करेंगे, जिस पर अंचलाधिकारी द्वारा नियमानुसार पर्याप्त कार्रवाई करते हुए अंतिम प्रकाशन किया जाएगा।

एन.आई.सी., बिहार के तकनीकी सहयोग द्वारा विकसित

(a) Original

Rayat Name: Dhirendra Kumar
Father's / Husband's name: Raghunandan Prasad
Habitat: Akauna Nizamat
Caste : mahto
Revenue Police Station No: 369

Revenue and Land Reforms Department
Bihar government
record of rights

district : (36) Nawada
Zone : (1) Nawada
Mauja: (338) Akauna Nizamat
Account Holder No.: 3601010338000344

account number	Name of the raiyat*	khesra number	farm fourteen	variety land	drop off			interference, form of interference	According to the investigation of the prince, the rent and cess	,	Long period of non-occupational ryot possession	Summary of the order, memorandum and date for recording the changes Designation of the officer who gave the order	Navayat / Jamabandi No.
					oh	Day	hey						
1	2	3	4	5	6	7	8	9	10(₹)	11(₹)	12	13	14
108		00	E.- P.- U.- D.-	other	0	7	0		0	0			Kymi 111/2

The current Khatian has been published in draft form. This format may contain typos or other inaccuracies, hence it will not be legally recognized at present and land ownership claim on its basis will not be admissible. On the basis of this format, the raiyat will file their objection (if any) within 30 days from the date of publication in the respective circle offices, on which the final publication will be done by the circle officer after taking appropriate action as per rules.

Developed by technical collaboration of NIC, Bihar

(b) Google translated

Figure 1. Example of Bihar land record. Screenshot of originating source on `http://land.bihar.gov.in`. Google translation of Hindi to English comes with errors.

2 Bihar land records

The foundational data we use for this study is the Bihar land records. In total, we have around 41.87 million land records and 12.12 million individuals/accounts. Each record is for a plot of land enumerating details such as the land owner's registered account number, name of the owner (ryot or raiyat), name of the owner's father, residence (is this village?), caste, amongst others. See Figure 2 for an example copy of a land record and Table 1 for the fields included in each record.

To compare land area for each land plot, we use the fields 6–8 (Table 1) for acre, decimal, and hectare as land area in acres $= Acre + \frac{Decimal}{100} + Hectare \times 2.4711$. Three account holders across fourteen land records have negative land plot areas and we drop these for analyses relating to land plot areas.

The original names are in Hindi. We use the Indicate package (Chintalapati and Sood 2022a) to transliterate the Hindi scripts to English.

The land records also come with caste of the owner, we work only on the top 200...

Last name	Religion	Count
Devi	Not-Muslim	172,507
Singh	Not-Muslim	121,827
Yadavas	Not-Muslim	113,381
Siha	Not-Muslim	68,161
Sah	Not-Muslim	66,308
Ray	Not-Muslim	64,250
Mahato	Not-Muslim	62,392
Mandal	Not-Muslim	60,880
Khatun	Muslim	38,940
Thakur	Not-Muslim	35,708
Chaudhuri	Not-Muslim	34,429
Jha	Not-Muslim	33,695
Vagairah	Not-Muslim	33,431
Das	Not-Muslim	32,973
Paswan	Not-Muslim	32,127
Rama	Not-Muslim	30,579
Prasad	Not-Muslim	30,400
Mishra	Not-Muslim	28,002
Miyan	Muslim	27,387
Sharma	Not-Muslim	27,071
Kumar	Not-Muslim	21,529
Pande	Not-Muslim	21,130
Manjhi	Not-Muslim	21,019
Pandit	Not-Muslim	20,008
Miya	Muslim	19,406
Khan	Muslim	19,144
Ali	Muslim	18,590
Bhagat	Not-Muslim	18,348
Tiwari	Not-Muslim	17,441
Gopa	Not-Muslim	17,021

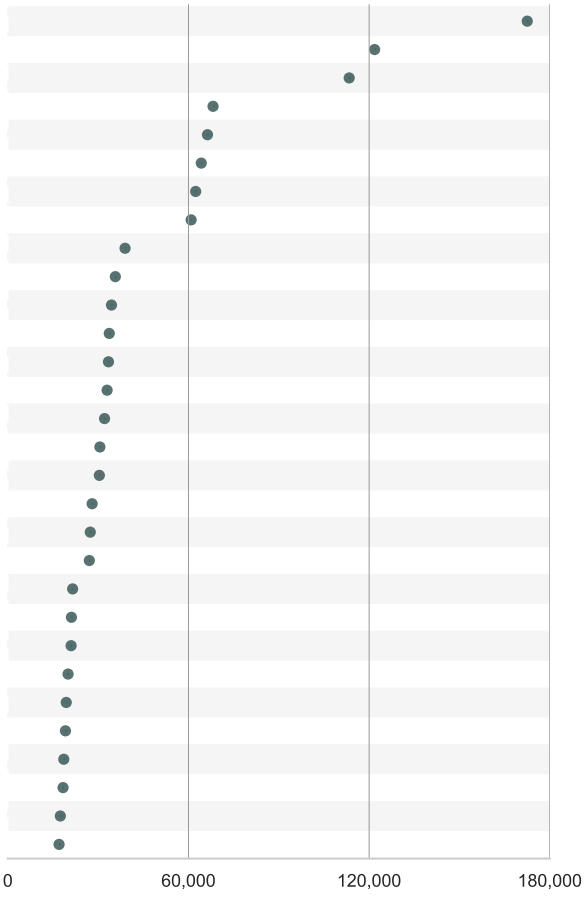


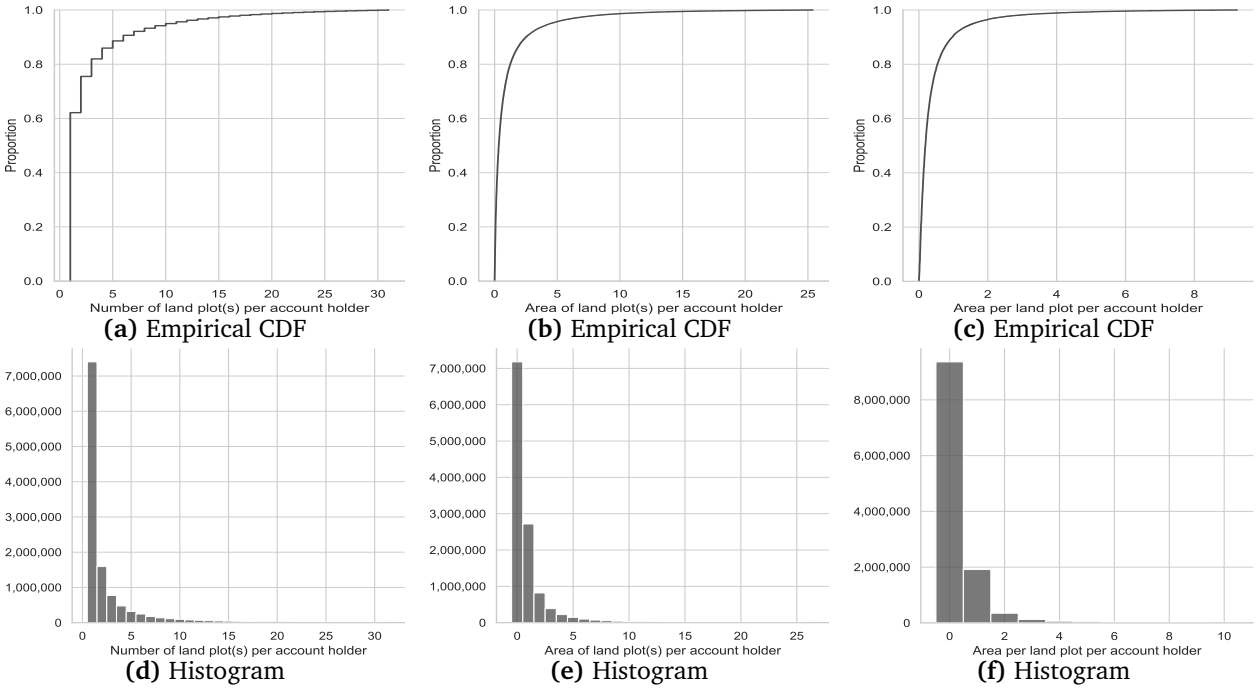
Figure 2. 30 most common last names. Figure reports the 30 most common (transliterated) last names in the Bihar land records. Religion comes from the Hindi names and the Pranaam package (Chintalapati and Sood 2022b).

Field	Description
name of ryot	Name of land plot owner (ryot or raiyat)
name of father	Name of owner's father
residence	
caste	
revenue unit	
district	
divison	
mouza	
account no	Owner's unique account number
link	Original link of land record
1	
2	
3	
4	
5	
6	Land plot area in acre
7	Land plot area in decimal
8	Land plot area in hectare
9	
10	
11	
12	
13	
14	

Table 1. *Fields available in Bihar land record. See Figure 2 for an example of a land record and the information available.*

3 Distribution of Land in Bihar

3.1 Descriptive Facts on Land Distribution



(a) Empirical CDF **(b)** Empirical CDF **(c)** Empirical CDF

(d) Histogram **(e)** Histogram **(f)** Histogram

Figure 3. Distribution of land in Bihar. Column 1 is the number of land plots per account holder. Column 2 is the total area of land plot(s) per account holder. Column 3 is the area per land plot per account holder. Row 1 shows the empirical cumulative distributions. Row 2 shows the histograms. Area units is in acres. All subfigures have the 99th percentile trimmed for visual articulation. See Table 2, Table 3, and Table 4 for the percentile values at the right tail, including the 99th percentile.

To start, we expose the skewness of land ownership in Bihar in Figure 3. Land ownership is skewed by (i) the number of land plots owned , (ii) the area of land plots owned, and (iii) the area per land plot owned. Most land owners (the unique account registry number) are clustered on the left side of the distributions with a heavy tail on the right.

Most land owners, more than 50 percent, own only one land plot. More than 70 percent own only two land plots. The 90th percentile land owner in number of land plots owned, in comparison, own 7 land plots. The 99th percentile owns 32 land plots.

A similar heavy right-skewed distribution can be seen the in area of land owned. The median land plot is only 0.34 acres, which is 0.001 square kilometers or 0.0005 square miles. The 90th percentile in land area owned, in comparison, is 8 times larger at 2.74 acres. The

Percentiles	Plots
0.00	1
0.10	1
0.20	1
0.30	1
0.40	1
0.50	1
0.60	1
0.70	2
0.80	3
0.90	7
0.95	12
0.96	14
0.97	17
0.98	22
0.99	31
1.00	3098

Table 2. *Number of plots owned per account holder, by percentiles. See Figure 3 for the distributions up to the 99th percentile (31 land plots per account holder).*

Percentiles	Land plot area
0.00	0.00
0.10	0.04
0.20	0.08
0.30	0.14
0.40	0.22
0.50	0.34
0.60	0.51
0.70	0.80
0.80	1.31
0.90	2.74
0.95	5.20
0.96	6.31
0.97	8.08
0.98	11.58
0.99	25.39
1.00	11450287.59

Table 3. *Area of land plot per account holder, by percentiles. Units of area in acres. See Figure 3 for the distributions up to the 99th percentile.*

99th percentile has land plot that is 75 times the median land owner.

When we account for area owned on a per plot basis, we get similar skews in distribution. The median area owned per plot is 0.18 acres, which is 0.0007 square kilometers or 0.0003 square miles. In comparison, the 90th percentile is 5 times larger at 0.93 acres, while the 99th percentile is 44 times larger at 7.99 acres. The percentiles are tabulated in Table 2, Table 3, and Table 4.

Percentiles	Land plot area
0.00	0.00
0.10	0.03
0.20	0.06
0.30	0.10
0.40	0.14
0.50	0.19
0.60	0.26
0.70	0.37
0.80	0.56
0.90	1.03
0.95	1.83
0.96	2.18
0.97	2.81
0.98	4.18
0.99	9.24
1.00	2100934.38

Table 4. *Area of land plot per plot per account holder, by percentiles. Units of area in acres. See Figure 3 for the distributions up to the 99th percentile.*

References

Chintalapati, R. and G. Sood (2022a, 8). Indicate: Transliterate Indic Languages to English.

Chintalapati, R. and G. Sood (2022b, 5). pranaam: predict religion based on name.