



Performance on work completion under MGNREGS: District-wise analysis of Gujarat

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Abstract

To enhance rural livelihood security and achieve inclusive growth, Government of India has opted for a right's based and guaranteed wage employment program intervention. Accordingly, the Indian Parliament has passed the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) in 2005, which came into force in February 2006. The Right to Work or the MGNREGA in a short span of ten years generated 170.6 crores person-days of employment benefitting 12.22crores workers from which more than half were women. In Gujarat, the implementation of MGNREGA started from February 2006 in 6 districts and gradually covered whole State. As a statutory law, it holds the government accountable for providing at least one hundred days of guaranteed wage employment in every financial year to every household in rural areas of India. Another important component of Mahatma Gandhi NREGA is to create sustainable local assets related to natural resource management, environment protection, enhancing rural connectivity and land development and water related works. 4.6 crores assets all India level has been created so far and 9.5 lakhs assets created in Gujarat. This study aimed to investigate work completion rates of projects under taken by each districts of the Gujarat state and to explore its's relationship with the person-days generated under the Mahatma Gandhi NREGA. Study finds alarming steady falling rate of work completion rate despite increasing trend of work demand and person-days generated in the same span of time.

Keywords: MGNREGA, Employment, Assets creation, Rural Livelihood, participative development, distributional concern, Gujarat, Rural Development

1. Introduction

Mahatma Gandhi National Rural Employment Scheme or often referred as Act (MGNREGS / MGNREGA) is perhaps the largest and most ambitious social security and public works Programme in the world. (Shah, 2012) [20]. The Act was notified on September, 7th 2005 and implementation began in February, 2nd 2006. The Act notified on September, 7th 2005, and implementation began in February, 2nd 2006. The words 'Mahatma Gandhi' was prefixed to the National Rural Employment Guarantee Act as an amendment. MGNREGS implemented in three phases covering a total of 625 districts of the country. (ACT M.). Following table shows coverage and districts notification in phase wise

Table 1: Phase wise coverage of districts under MGNREGS

Phase	I	II	III	Total
No. of Districts Notified	130	200	295	625

The Phase I started with effect from February 2006. In a financial year 2007-08, Phase II became operative and phase III covering all remaining districts notified with effect from April 2008. Barring exception to the entire urban districts, Mahatma Gandhi NREGS is fully operative in the country since April 1st 2008. All the states have notified their respective Mahatma Gandhi NREGS Schemes, as per the requirement of the Act. The Scheme formulated by the State Government, stipulated to provide for the minimum features specified in Schedule I of the Act. Persons employed under any State Scheme made under the Act shall be entitled to minimum facilities listed in Schedule II of the Act. The Schemes prepared by the state should be consistent with the

amendments made, from time to time, to the Act and its Schedules. (Circular, 2019-20) [6].

Under the Act, every rural household whose' adult member is ready to take up unskilled manual job has legal right to demand 100 days of employment during the financial year within a radius of five kilometers of the village where the applicant resides at the time of applying.

Para 1, Schedule II of the Act stipulates: "*The adult member of every household residing in any rural area and willing to do unskilled manual work may submit their names, age and the address of the household to the Gram Panchayat at the village level in whose jurisdiction of which they reside for registration of their household for issuance of a job card.*" (ACT N, 2005) [2,3]

Till September 2019, Mahatma Gandhi NREGS has 12.22crores active workers and benefitted 4.43 crores rural households. The scheme has generated 170.6 crores person-days and created 4.68 crores assets; out of it 1.63 crores are individual category works. The scheme is increasingly relying on direct benefits transfer and real time data management system. Mahatma Gandhi NREGS has a positive impact on labour force participation, and this impact is driven by a significant impact on the female labour force participation (Mehtabu, 2012) [13]. Capacity of women to earn independently through the Mahatma Gandhi NREGS has increased their say in household affairs. Women were found to be more assertive, and their voices are now being heard more often (Tankha, 2009) [21]. However, as (Govind, 2009) [11] noted the large number of women workers under Mahatma Gandhi NREGS has minimal rights to productive assets, and this contributes to a persistence of social exclusion on a large scale. Mahatma Gandhi NREGS also reported to have positive

effects on spending, health outcomes and children’s education. The income from Mahatma Gandhi NREGS made very significant contribution to children’s well-being such as reducing hunger, improving health and education. (Dev S, 2011) [7]. The workers are able to spend considerable amount on the education and health of their children. (Nair, 2009) [18]. Increase in income has resulted in increase in power to purchase food grains, other essential commodities, and to access education and health care. (MORD, 2010) [15]

One of the main purposes of the Mahatma Gandhi NREGS is to provide employment in the agricultural lean season when agricultural work is limited, the lean season will affect all the people employed in farm and off-farm related activities. (Tina, 2011) [22] As per act it is well designed right based framework and for this very reason the Scheme becomes distinct to the previous employment generation and rural livelihood security schemes. The total employment generated under Mahatma Gandhi NREGS is clearly much larger than earlier employment programmes such as SGRY and NFFWP (Kievetskroon Pretoria, 2008) [12] and the number of person days generated per year among the Mahatma Gandhi NREGS is better compared to the earlier programmes. (Naganagoud. S.P., 2010) [17] The scheme also contributed in creating sustainable assets. There has also been an increase in village infrastructure as a result of Mahatma Gandhi NREGS, which has in turn led to increased agricultural productivity. (Chowdhury, 2011) [5]

Mahatma Gandhi NREGS in Gujarat



Fig 1: Gujarat (red filled) on Indian map. Location coordinates 23°13'N 72°41'E

The Indian state, Gujarat, is located near the Arabian Sea on the western coast of the country has a total area of 75,685 square miles accounting for roughly 6.19% of the total area of the country, and it is 5th largest state in terms of area. (Directorate of Economics and Statistics, 2015) [8] According to the census 2011, Gujarat has a sizeable population of 60,383,628 (Census, 2011) which makes Gujarat the 10th largest state in terms of population. 57.40% of the total population reported as rural residents (PCA-Final, 2011) [19]. Interestingly Gujarat is one of the rare states registered a significant increase in urban to rural migration, and that is evident from the census data as it had

50.24% rural population back in 2001.

While Mahatma Gandhi NREGS notified districts back in 2012, Gujarat had only 26 districts, but in 2013, seven districts were carved out from the existing districts, and at present, it has a total of 33 districts, 248 blocks, and 18225 villages. Gujarat has implemented Mahatma Gandhi NREGS in three phases in the following manner.

Districts in Phase I	Districts in Phase II	Districts in Phase III
Banaskanthan Dang Dohad Narmada Panch Mahals Sabarkanthan	Valsad Bharuch Navsari	Kheda Patan Amreli Mehsana Surendra Nagar Anand Junagdh Kachchh Gandhinagar Bhavnagar Jamnagar Vadodara Porbandar Rajkot Surat Ahmedabad Tapi
06	03	17

- Seven new districts added and brought under coverage of Mgnrega on 15th August 2013.
1. Aravalli was carved out from Sabarkantha.
 2. Botad was carved out from parts of Ahmedabad and Bhavanagar districts.
 3. Chhota Udaipur rivens from Vadodara District.
 4. Devbhoomi Dwarka emerges from parts of Jamnagar district.
 5. Mahisagar emerges from parts of Kheda and Panchmahal.
 6. Morbi emerges from parts of Rajkot, Surendranagar, and Jamnagar districts.
 7. Gir-Somnath splits from Junagadh

Source: (Districts_notified, 2008)

Since the inception of the scheme, there are 39.03 lakhs of Job Cards (JCs) issued and 87.76 unique workers are registered out of it 39.8% of JCs and 30% of total workers are active.

Works under Mahatma Gandhi NREGS

The review of employment generation programs reveals that historically, India has implemented programs that are temporary and less sustainable. Generally, rural employment programs used to include work only aimed to provide relief from a situation in the wake of natural calamities. Mahatma Gandhi NREGS is the first rural livelihood program that goes beyond such thinking. On the contrary to previous employment generation and poverty eradication program, Mahatma Gandhi NREGS focuses on the sustainable asset creation and engage with the work that reduces the vulnerability of rural people at the time of natural calamities lie drought, irregular monsoon or flood. Schedule I of the Mahatma Gandhi NREGS Act under Paragraph 4(1) laydowns provisions for the following works under MGNREGS. (ACT N. 2005) [2, 3]

A) Category I

Mahatma Gandhi NREGS strongly emphasizes on the public works relating to natural resource management as it includes the following tasks in this category.

1. Water conservation and water harvesting structures to augment and improve groundwater like underground dikes, earthen dams, stop dams, check dams, with particular focus on recharging groundwater including drinking water sources.
2. Management of Watershed works, for example, contour trenches, terracing, contour bunds, boulder checks, gabion structures, & development of springshed, resulting in a comprehensive treatment of a watershed.
3. Micro and minor irrigation works: creation, renovation, and management/maintenance of irrigation canals and drains.
4. Restoration of traditional water bodies, including desilting of irrigation tanks and other water bodies.
5. Afforestation, tree plantation, and horticulture in common - forest lands, road margins, coastal belts, tank foreshores, and canal bunds duly providing right to usufruct to the households as covered in paragraph 5 of the Mahatma Gandhi NREGS Act.
6. Land development works in common land.

B) Category II

Category II work relates to the creation of Individual assets for vulnerable sections as per the schedule I, paragraph 5 of the Act.

Vulnerable sections include Schedule Caste, Schedule Tribes, nomadic tribes, de-notified tribes, families living below the poverty line, households headed by Woman or physically handicapped, beneficiaries of land reforms, The beneficiaries under the *Pradhan Mantri Awaas Yojana-Gramin*, beneficiaries under the Scheduled Tribes and Other Traditional Forest Dwellers. Under this category, The Act suggests the following tasks.

1. Tasks aimed to improve the productivity of lands of households specified in paragraph five of schedule I through land development and by providing suitable infrastructure for irrigation, including dug wells, farm ponds, and other water harvesting infrastructure.
2. Fallow or wastelands development of households defined in paragraph 5 of Schedule I to bring it under cultivation.
3. Livelihood improvement via horticulture, sericulture, plantation, and farm forestry.
4. Unskilled wage component in the construction of houses sanctioned under the *Indira Awaas Yojna (IAY)* or similar schemes implemented by state or central government agencies.
5. Infrastructure building for the promotion of fisheries and allied activities that includes constructing the yards for fish drying and storehouse facilities.

C) Category III

Common infrastructure for National Rural Livelihood Mission (NRLM) compliant Self-Help Groups (SHGs) like;

1. Works for promoting agricultural productivity by creating the durable infrastructure required for bio-fertilizers and post-harvest facilities, including pucca storage facilities for agriculture produce.
2. Building Common work sheds for livelihood and other activities of self-help groups.

D) Category IV Rural Infrastructure

1. Rural sanitation-related works, such as individual

household latrines, school toilet units, Anganwadi toilets either independently or in convergence with schemes of other government agencies to achieve "open defecation free" status. Solid and liquid waste management as per norms prescribed in the Act.

2. Construction of Playfields
3. Construction of building for Gram Panchayats, federations of women self-help groups, cyclone shelter, Anganwadi centers village hats, and crematoria at the village and block level.
4. Work-related to all-weather rural road connectivity to unconnected villages and connecting identified rural production centers with the existing pucca road network. Construction of streets or internal roads, including side drains and culverts within a village.
5. Disaster preparedness works or restoration of roads and restoration of other public infrastructures, which is essential.
6. Works for improving flood control and protection works, installing drainage in waterlogged areas, repairing flood channels, *chaur* renovation, and construction of stormwater drains for coastal protection.
7. For implementing the provision of the National Food Security Act, 2013, works related to the construction of structures for food grain storage.
8. Building material production as per the requirements for construction works under the Mahatma Gandhi NREGS Act.
9. Maintenance of rural public assets created under the Mahatma Gandhi NREGS.

The Schedule-1 of the Mahatma Gandhi NREGS Act offers a considerable list of permitted works categorized into the above four parts. Based on the various works mentioned in the Schedule, the Management Information System (MIS) has listed 43 categories of works covering 260 types of works permissible under the Programme. Each work has been sub-classified according to the ownership, action proposed on the work, and two further qualifiers which elaborate the intended usage and materials used. Based on the above combination of work, ownership, and qualifiers, there are 260 combinations of works which are permissible under Mahatma Gandhi NREGS. Of this, 181 works related to Natural Resource Management, of which 84 related to waterworks. One hundred sixty-four works are related to agriculture and allied activities. The MIS has been enabled to generate a complete description of each possible work in terms of various combinations of the categories, as mentioned above, within the framework, permissible works as per provisions of the Schedule-I.

Table 2 shows category wise completed works or assets created from 2013-14 to 2019-20 till September 2019 in Gujarat state. Category IV works has largest share in total created assets that amounts to 38% of total works completed. Rural sanitation works amounts second largest share of 31% following the works on individual land. Despite Gujarat is having largest coastal area in the country work on coastal area has least share in the list. Other works like Renovation of traditional water bodies, Flood Control and Protection, Bharat Nirman Rajeev Gandhi Sewa Kendra, Micro Irrigation Works, Anganwadi/Other Rural

Infrastructure, Rural Drinking Water, Play Ground have very negligible share as shown in table 2.

Table 1: Category wise completed works (2013-2019)

Category of work	Complete work	% of total works
Works on Individuals Land (Category IV)	242430	38.00593848
Rural Sanitation	198127	31.06052292
Water Conservation and Water Harvesting	42264	6.625759946
Land Development	36308	5.692033223
Rural Connectivity	32377	5.075767315
Drought Proofing	27795	4.357443633
Renovation of traditional water bodies	24750	3.88007663
Flood Control and Protection	17287	2.710096351
Other Works	12026	1.885325315
Bharat Nirman Rajeev Gandhi Sewa Kendra	2177	0.341289973
Micro Irrigation Works	1095	0.171663996
Anganwadi/Other Rural Infrastructure	1076	0.168685352
Rural Drinking Water	76	0.011914579
Play Ground	67	0.010503642
Fisheries	13	0.00203802
Coastal Areas	6	0.000940625
Food Grain	0	0
Total	637874	100

Source: Author’s calculation from MIS year-wise data (2013-14 to 2019-20)

Objectives of the Study

The study aims to achieve following objectives;

1. To analyze the district wise performance based on the yearly work completion rate.
2. To evaluate the relationship between annual work completion rate and person-days generated

Data Sources and Research Methodology

Data of 33 districts of Gujarat State related to the work started, work completion, work under progress, and person-days generated from 2016-17 to 2019-20 considered for the study. Secondary Data mostly obtained from the Mahatma Gandhi NREGS Portal and State and district wise MIS reports. District-wise data analyzed using statistical methods like mean, median, growth rate, and ranking. Spearman’s Rank correlation used to check the relationship between the rank variables.

Spearman’s Rank correlation is similar to the Pearson’s correlation coefficient but the only difference is it is performed between the ranks. Thus, it is defined as “Pearson’s correlation coefficient between rank variables” (Myers & Well, 2003) [16]. Another name of Spearman’s rho is “Grade Correlation” (G.U. Yule, 1968) [10] The formula of Spearman’s rho in case on no ties between the ranks.

$$\rho = 1 - \frac{6 \sum d_i^2}{n(n^2 - 1)}$$

Where,

ρ = Spearman’s rho correlation coefficient

Table 2: District Wise Work Completion Rate (In percentage)

District	WCR 2016-17	WCR 2017-18	WCR 2018-19	WCR 2019-20
Ahmadabad	99.13	63.58	46.93	16.54
Amreli	99.24	86.22	60.08	19.85
Anand	99.5	95.6	74	5.72
Arvalli	99.93	94.93	89.33	34.91
Banas kantha	97	59.69	43.05	61.95

d_i = Difference between Rank of Yearly Work Completion Rate (WCR) and Rank of generating person days
 n = No. of total districts (33)

Following Spearman’s Rank correlation coefficient is used in case of the tied ranks

$$\rho = \frac{\frac{1}{n} \sum_{i=1}^n (R(x_i) - \overline{R(x)}) \cdot (R(y_i) - \overline{R(y)})}{\sqrt{\left(\frac{1}{n} \sum_{i=1}^n (R(x_i) - \overline{R(x)})^2\right) \cdot \left(\frac{1}{n} \sum_{i=1}^n (R(y_i) - \overline{R(y)})^2\right)}}$$

Where,

ρ = Spearman’s rho correlation coefficient

$R(x_i)$ = Rank of the Person Days Generated during a financial year

$R(y_i)$ = Rank of the Yearly Work Completion Rate (WCR) during a financial year

$\overline{R(x)}$ = Mean Rank of Person Days Generated.

$\overline{R(y)}$ = Mean Rank of Yearly Work Completion Rate (WCR)

The Spearman correlation coefficient is “nonparametric” in nature. This means

1. A perfect Spearman correlation results when any monotonic function relates x and Y. Contrast this with the Pearson correlation, which only gives an ideal value when a linear function links x and Y.
2. Spearman correlation is nonparametric in a sense that its exact sampling distribution has no prerequisite any knowledge or assumptions about the features of population
3. Produces result even if with skewed distributions and population variables are non-homogeneous.

Discussion of results

District-wise analysis of Work Completion Rate

Table 3 below shows Work Completion Rate (WCR) in percentages of the last four financial years starting from 2016-17 to 2019-20. Data till 30th September 2019 taken for the present financial year. Work Completion Rate is driven from the following formula

$$WCR = \frac{TWC \times 100}{TWS}$$

Where,

WCR = yearly Work Completion Rate

TWS = Number of Total works started during the financial year

TWC = Number of Total works Completed during the financial year.

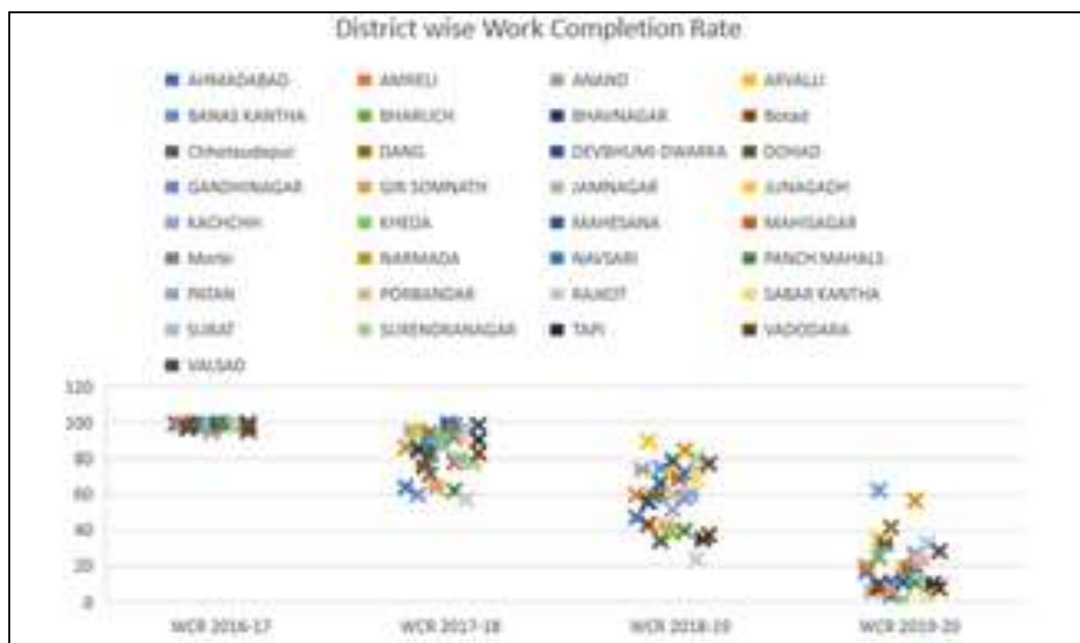
Bharuch	99.11	87.26	56.71	24.88
Bhavnagar	97.15	84.8	55.93	9.91
Botad	99.86	75.31	42.7	7.05
Chhotaudepur	97.23	71.24	59.19	32.09
Dang	99.62	94.52	60.17	41.14
Devbhumi Dwarka	99.51	86.46	66.26	11.06
Dohad	97.72	81.97	33.85	2.82
Gandhinagar	99.64	91.16	74.52	4.57
GIR Somnath	94.73	63.65	42.39	7.69
Jamnagar	99.72	94.06	59.3	14.72
Junagadh	97.75	91.44	74.8	18.93
Kachchh	97.08	87.12	51.29	13.68
Kheda	99.02	91.2	38.45	0.6
Mahesana	99.87	99.92	78.93	10.91
Mahisagar	97.64	77.95	68.52	18.69
Morbi	98.57	91.7	57.74	26.29
Narmada	99.88	96.35	84.77	56.39
Navsari	99.72	98.43	72.08	20.03
Panch Mahals	98.89	62.25	39.54	10.58
Patan	99.96	79.63	59.46	24.4
Porbandar	99.17	97.1	74.04	23.16
Rajkot	98.15	57.43	23.93	8.41
Sabar Kantha	98.76	89.7	67.6	3.54
Surat	99.68	95	80.04	31.99
Surendranagar	98.8	77.18	80.38	9.45
Tapi	99.03	90.46	34.98	10.05
Vadodara	95.66	82.59	37.4	7.72
Valsad	99.89	98.4	77.3	28.4
Total	98.92	82.16	60.18	19.35

Source: Author’s compilation & calculation from the data available on MIS reports

The results of table 3 graphically presented and shown in figure 2 below. Prima facie, it is evident that in almost all districts, there is a downward trend of yearly WCR. From 2006-07 to 2016-17, a total of 60,5,975 work was taken up, and nearly 98.66% work (59,7,870) completed. The average All Gujarat WCR in 2016-17 was 98.6%, which reduced to 80.6% next year. The trend continued in the following years, and yearly WCR stood at 57.37% in 2018-19 and 19.44% in 2019-20 till September 30th of the year. The continuous decreasing trend is surprising in many ways; first, it is the WCR that yearly assesses the performance of

the districts and state based on total work completed. Second, WCR also takes individual work into account, and that has increased in recent years. Third, the demand and person-days generated during the time are not showing any significant or sudden dip.

There was a total of 20 districts in 2016-17 that registered more than 99% WCR. Furthermore, none of the districts registered less than 94% of WCR. The lowest WCR was 94.73% of Gir Somnath District, which was recently carved out from the Junagadh District. Patan district had the highest WCR of 99.96%.



Source: Authors illustration from MIS Data.

Fig 2: District Wise Annual Work Completion Rate

In the year 2017-18, All districts except one (Mehsana) registered negative growth at an average of 27%. Patan District that registered 99.96% in the previous year saw 20% down in the 2017-18 WCR. The lowest performance in terms of work completed in this financial year was marked by the Rajkot district that saw a massive 40% negative growth over the last year. On the contrary to the previous year, not a single district was able to achieve 99% or more. Only ten districts were able to obtain more than 94% WCR. Districts like *Panch Mahals, Gir Somanath, Banaskantha, Ahmedabad, Chhota Udepur, Patan, and Surendranagar* arose as lowest performers registering more than 25% negative growth over the previous year while Mehsana was the only district that recorded positive growth of meager 0.5%.

During the financial year 2018-19, the decreasing trend of work completion rate continuous at an increasing rate. The situation worsens in this year as half of the districts records less than 50% of WCR. on average of 25% negative growth recorded over the previous year and an alarming 39% negative growth marked over the 2016-17. The WCR of ten

districts halved in just two years, which includes Dohad, Ahmedabad, Kheda, Banaskantha, Botad Panch Mahal, Gir Somnath, Vadodara, Tapi, and Rajkot. The lowest performer in terms of achieving the work completion rate of this year was the Tapi district that saw 55.48% negative growth over the previous year and 64.05% over 2016-17. Surendranagar district was the only exception that marked a definite increase of 3.2% from a year earlier.

We have taken data till September 2019 for the present financial year; thus, the result of WCR calculation is not conclusive. However, the increasing trend of registering a negative trend over the previous year continues — poor performance of the districts in terms of achieving a work completion rate is evident and alarming.

For a clear understanding of the inter-district performance of WCR and to identify consistent better performers and poor performers, we have assigned ranks to the districts annually. Higher the WCR rate means more top the ranking. The aggregate of total four years rankings dubbed as overall ranking. The following table 3 shows the rankings of the districts based on WCR.

Table 3: Rankings of the districts based on WCR

District	WCR Rank 2016-17	WCR Rank 2017-18	WCR Rank 2018-19	WCR Rank 2019-20	Overall ranking
Ahmadabad	16	30	24	16	22
Amreli	14	20	16	13	15
Anand	13	6	10	29	11
Arvalli	2	8	1	4	2
Banas Kantha	31	32	25	1	25
Bharuch	17	17	21	9	16
Bhavnagar	29	21	22	23	28
Botad	6	27	26	28	24
Chhotaudepur	28	28	19	5	20
Dang	11	9	15	3	7
Devbhumi Dwarka	12	19	14	19	17
Dohad	26	23	32	32	31
Gandhinagar	10	14	8	30	13
Gir Somnath	33	29	27	27	33
Jamnagar	7	10	18	17	9
Junagadh	25	12	7	14	12
Kachchh	30	18	23	18	26
Kheda	19	13	29	33	27
Mahesana	5	1	5	20	5
Mahisagar	27	25	12	15	19
Morbi	23	11	20	8	14
Narmada	4	5	2	2	1
Navsari	8	2	11	12	6
Panch Mahals	20	31	28	21	29
Patan	1	24	17	10	10
Porbandar	15	4	9	11	8
Rajkot	24	33	33	25	32
Sabar Kantha	22	16	13	31	21
Surat	9	7	4	6	4
Surendranagar	21	26	3	24	18
Tapi	18	15	31	22	23
Vadodara	32	22	30	26	30
Valsad	3	3	6	7	3

Source: Author's own calculation from the data available on MIS - MGNREGASOFT

Based on above rankings of the 33 districts, following are the topmost and lowermost performer districts in achieving

annual work completion rate.

Box 1 WCR topmost and lowermost districts

Top Ten ↑	Least Ten ↓
Narmada	Botad
Arvalli	Banas Kantha
Valsad	Kachchh
Surat	Kheda
Mahesana	Bhavnagar
Navsari	Panch Mahals
Dang	Vadodara
Porbandar	Dohad
Jamnagar	Rajkot
Patan	GIR Somnath

Source: Authors based on inter-districts WCR rankings

The district-wise analysis provided crucial insight on the yearly Work Completion Rate (WCR), but also the same

time it has posed critical concern that when it comes to work completion, why all the districts in the state are doing poorly over the years? The constant decrease in WCR needs to be addressed, and it is a subject of further research. One explanation of the decreasing WCR can be the corresponding reduction in demand for the work or lesser person-days generated during the financial year. There is a scope to examine whether any relationship exists between the yearly work completion rate and person-days created annually. To explore this possibility, we have tested the following hypothesis.

H0 = There is no relationship between yearly WCR and Annual Person-days generated.

Where, H1 = There is a relationship between yearly WCR and Annual Person-days generated.

Table 5: District wise person days generated

District	PD 2016-17	PD 2017-18	PD 2018-19	PD 2019-20
Ahmadabad	393557	329566	550801	370174
Amreli	637827	694070	732020	34627
Anand	847434	752277	515283	6395
Arvalli	1018870	1468453	1900461	52899
Banas Kantha	1075218	2508057	2523852	42980
Bharuch	276845	321265	306174	6093
Bhavnagar	686477	667411	1107774	42802
Botad	414942	366525	408057	19588
Chhotaudepur	1615343	2583621	2854973	68648
Dang	957978	1215525	1044656	20328
Devbhumi Dwarka	673106	335290	773893	5264
Dohad	1318290	2486437	3809297	109008
Gandhinagar	285827	446386	510343	5251
GIR Somnath	849225	250760	337033	12579
Jamnagar	621536	579012	703198	19419
Junagadh	919108	681030	749733	27156
Kachchh	675566	461803	2497528	53607
Kheda	997902	1314748	636059	9782
Mahesana	725994	992790	706525	11631
Mahisagar	830216	1297940	1332997	27827
Morbi	116889	157453	227177	5361
Narmada	1505838	2007653	3159246	71679
Navsari	1158401	1046146	1285714	23709
Panch Mahals	1621789	2937879	3273849	72054
Patan	743142	1062268	1208386	28860
Porbandar	475786	300709	417115	9557
Rajkot	354426	281840	448915	17797
Sabar Kantha	1057700	1318566	1514517	33465
Surat	1344075	2207444	1437200	26020
Surendranagar	666445	1077816	1603309	29924
Tapi	1513820	1775697	2148727	31078
Vadodara	224693	433769	261484	4550
Valsad	502170	948639	975057	16849
Total	27106435	35308845	41961353	964038

Table 5 above shows district-wise person-days generated. Person-days are defined as days of work provided to per person. There was 30% growth in total person-days generated in 2017-18 over the previous year and there was 19% growth in 2018-19 over the last year. Similar trend can

be seen in the districts as well. However, there is a dip in 2019-20 till September 2019. Figure 3 presented below shows the comparison of overall person-days generated and annual work completion rate from 2016-17 to 2019-20.

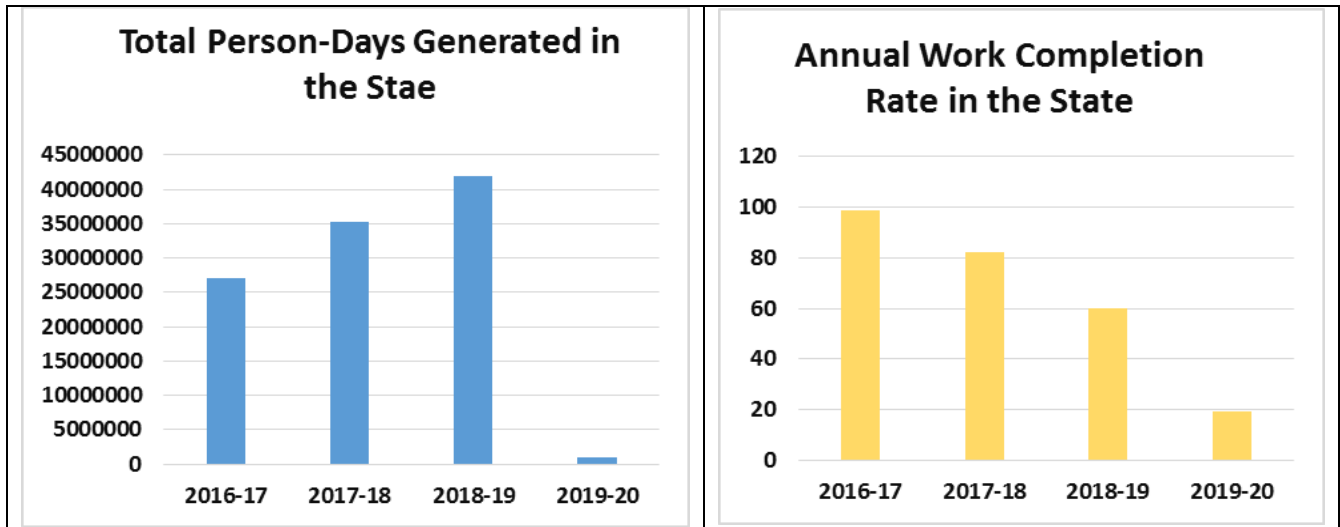


Fig 3: Person-days generated and WCR in the state

It is evident from the figure 3 that person-days over the years are increasing while annual work completion rate is consistently decreasing. Similar trend in the districts are also visible as resented in table 5. District wise performance in

generating person-days are presented in table 6 that shows inter-districts ranking in terms of generating person-days. Overall ranking is cumulative rankings of the districts for last four years.

Table 6: Inter-districts rankings of Person-days generated

District	PD Rank 2016-17	Rank 2017-18	Rank 2018-19	Rank 2019-20	Overall Ranking
Ahmadabad	28	28	24	1	21
Amreli	23	19	20	10	19
Anand	15	18	25	28	23
Arvalli	10	8	8	7	7
Banas Kantha	8	3	5	8	5
Bharuch	31	29	31	29	31
Bhavnagar	19	21	15	9	16
Botad	27	26	29	20	27
Chhotaudepur	2	2	4	5	2
Dang	12	12	16	19	14
devbhumi Dwarka	21	27	18	31	25
Dohad	6	4	1	2	3
Gandhinagar	30	24	26	32	30
GIR Somnath	14	32	30	24	26
Jamnagar	24	22	22	21	24
Junagadh	13	20	19	16	17
Kachchh	20	23	6	6	12
Kheda	11	10	23	26	18
Mahesana	18	16	21	25	20
Mahisagar	16	11	12	15	11
Morbi	33	33	33	30	33
Narmada	4	6	3	4	4
Navsari	7	15	13	18	10
Panch Mahals	1	1	2	3	1
Patan	17	14	14	14	15
Porbandar	26	30	28	27	29
Rajkot	29	31	27	22	28
Sabar Kantha	9	9	10	11	9
Surat	5	5	11	17	8
Surendranagar	22	13	9	13	13
Tapi	3	7	7	12	6
Vadodara	32	25	32	33	32
Valsad	25	17	17	23	22

Source: Author’s computation based on MIS data

Based on the rankings of total 33 districts topmost and lowermost performer districts in generating annual person-

days from 2016-17 to 2019-20 are presented in the following box.

Box 2: Person-days generating topmost and lowermost districts.

Top Ten ↑	Least Ten ↓
Panch Mahals	Jamnagar
Chhotaudepur	Devbhumi Dwarka
Dohad	Gir Somnath
Narmada	Botad
Banas kantha	Rajkot
Tapi	Porbandar
Arvalli	Gandhinagar
Surat	Bharuch
Sabar Kantha	Vadodara
Navsari	Morbi

Source: Authors based on inter-districts rankings in person-days generation

If we compare Box1 and Box 2, we will see wide variations in it. Only four districts got placed in both the boxes in terms of top performing in both person-days generation and achieving higher annual work completion rate and they are Narmada, Arvalli, Surat and Navsari. Similarly, in lower performing list only three districts namely Botad, Gir Somnath, and Rajkot appears in both the boxes. Interestingly, three districts Panch mahal, Dohad, and Banaskantha that generated higher person-days have lower annual work completion rates. However, there is no district that finds place in both higher annual work completion rate and lower person days generated. Table 6 shows comparison of two overall rankings of all the 33 districts.

Table 7: Inter-districts comparison of rankings

District	PD Overall Ranking	WCR Overall ranking	D	D2
Ahmadabad	21	22	1	1
Amreli	19	15	4	16
Anand	23	11	12	144
Arvalli	7	2	5	25
Banas Kantha	5	25	20	400
Bharuch	31	16	15	225
Bhavnagar	16	28	12	144
Botad	27	24	3	9
Chhotaudepur	2	20	18	324
Dang	14	7	7	49
Devbhumi Dwarka	25	17	8	64
Dohad	3	31	28	784
Gandhinagar	30	13	17	289
GIR Somnath	26	33	7	49
Jamnagar	24	9	15	225
Junagadh	17	12	5	25
Kachchh	12	26	14	196
Kheda	18	27	9	81
Mahesana	20	5	15	225
Mahisagar	11	19	8	64
Morbi	33	14	19	361
Narmada	4	1	3	9
Navsari	10	6	4	16
Panch Mahals	1	29	28	784
Patan	15	10	5	25
Porbandar	29	8	21	441
Rajkot	28	32	4	16
Sabar Kantha	9	21	12	144
Surat	8	4	4	16
Surendranagar	13	18	5	25
Tapi	6	23	17	289
Vadodara	32	30	2	4
Valsad	22	3	19	361

Source: Author’s calculation

D in the table 7 captures difference between the districts’s ranking of annual work completion rate and person-days

generation. District-wise correlation is presented in figure 4.

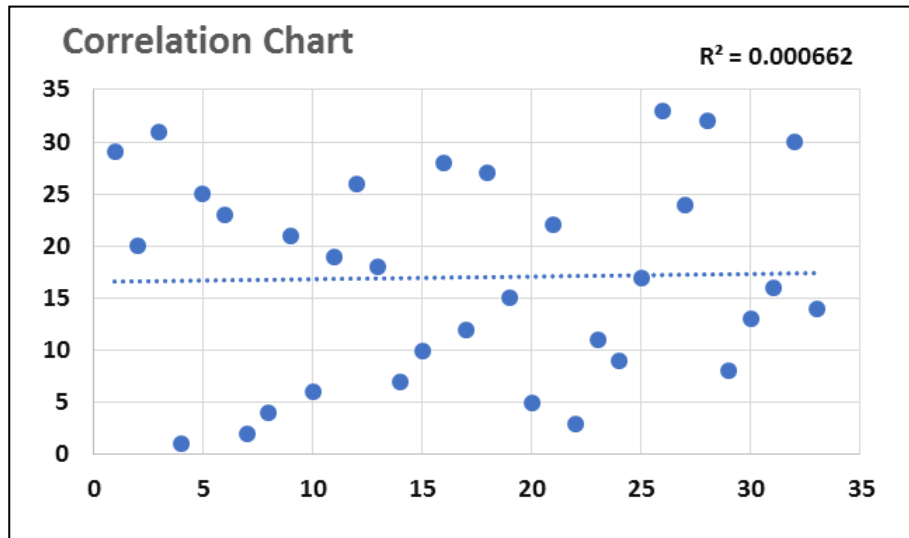


Fig 4: Correlation Chart

The analysis obtained spearman’s grade correlation $\rho = 0.02573$, which clearly shows that there is a fragile relationship between person-days generated and yearly completion rates. The result of $R^2 = 0.000662$ further establishes that the two variables are not showing any tendency of dependency and correlation. The dependent variable, the yearly work completion rate (WCR), is not showing a tendency to increase or decrease as a result of an increase or decrease in the independent variable, person-days generated. Thus, we accept our null hypothesis that is there is no relationship between person-days generated and yearly work completion rate.

Conclusion and Scope of further study

Annual work completion rate in Mahatma Gandhi NREGA is an indicator of performance and mark of efficiency and effectiveness of the scheme. Assets creation is as important as person-days generation. The recent trend shows alarming falling trend in achieving annual work completion rate. One possible reason for lower completion rate can be lower generation of person-days and decreasing demand of work. However, the result of the study confirms that there is neither decreasing demand of Mahatma Gandhi NREGA work nor lower generation of person-days. In fact, generation of person-days has increased over the year. The study also found that generated person-days are not effectively utilized in creating assets or completion of work. A qualitative study to explore possible reasons behind this phenomenon can throw more light on functioning of Mahatma Gandhi NREGA on ground.

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