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Section **One**

Report Inference

These sections depict the inference and major highlights of the report

1. Executive summary and highlights
2. Container movement across JNPT region
3. Performance Benchmarking

Section **Two**

LDB Analysis

These sections depict the analysis and the key metrics i.e. performance and transit metrics across the specific region

1. Import Cycle
   a) JNPT region
      - Port performance
      - Transit performance

2. Export Cycle
   a) JNPT region
      - Port performance
      - Transit performance

3. CFS and ICD
   1. JNPT region

4. Performance Trend
   1. JNPT region Port performance trend
      - Month on Month
      - Year on Year
      - Container Volume and dwell time forecast

Section **Three**

Annexure

These sections depict in depth analytics and data details

SECTION I:
Report Inference

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The report presents the LBD findings for July'18
In addition to documenting the trend of logistic container operators i.e. Port terminals, Inland Container Depot(s) and Container Freight Station(s) , the report also showcase the following
- Performance Analysis
- Congestion Analysis
- Container traffic movement at Port terminals

LDB analytics Summary : July'18

Western Corridor

- In western corridor(JNPT, Mundra & Hazira), **import cycle** dwell time performance has **improved** by **20%** (from 45hrs in June'18 to 36hrs in July'18). However, in **export cycle** there was a **decrease** in dwell time performance by **5%** (from 83hrs in June'18 to 87hrs in July'18)

- Dwell time performance for Inland Container Depots(ICD) and Container Freight Stations(CFS) have **decreased** by **7%**(from 128.15hrs in June'18 to 137hrs in July'18) & **1%**(from 89.75hrs in June'18 to 91hrs in July'18) respectively

JNPT Port

- In **Import cycle**, JNPT port dwell time performance for July'18 was 37.14hrs which has **improved** by **16%** as compared to previous month, this is majorly because of **18% improvement** in dwell time of truck bound containers (from 37.95hrs in June'18 to 31.27hrs in July'18)

- At JNPT port, there has been a constant decrease in port dwell time performance in train bound containers for import cycle:

Import Cycle	May'18 (in hrs)	June'18 (in hrs)	July'18 (in hrs)	Performance decrease over the months (in CAGR%)	
Train Bound Containers Dwell Time	98.35	151.63	184.67	37%	⬇

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LDB analytics Summary : July'18

JNPT Port

- JNPT port performance in handling Direct Port Delivery(DPD) containers has **improved** by **8%**(from 56.5hrs in June'18 to 51.75hrs in July'18). However, the port performance in handling Direct Port Export(DPE) containers has **decreased** by **8%** (from 72hrs in June'18 to 77.95hrs in July'18)

- Comparative analysis for July'18 and July'17 revealed the following

  - NSIGT terminal has **improved** its performance by **13%**(from 65hrs in July'17 to 56hrs in July'18) while increasing the container volume by 30%
  - JNPCT terminal has increased its container volume by 20%, however, the port performance has **decreased** by **28%**(from 57hrs in July'17 to 73hrs in July'18)

Gujarat Port

- Gujarat Port dwell time performance in import cycle has **improved** by 25%(from 47.02hrs in June'18 to 35.29hrs in July'18)
- Transit time between Gujarat Port and ICDs(NCR region) has **improved** by **10-12%** as compared to last month

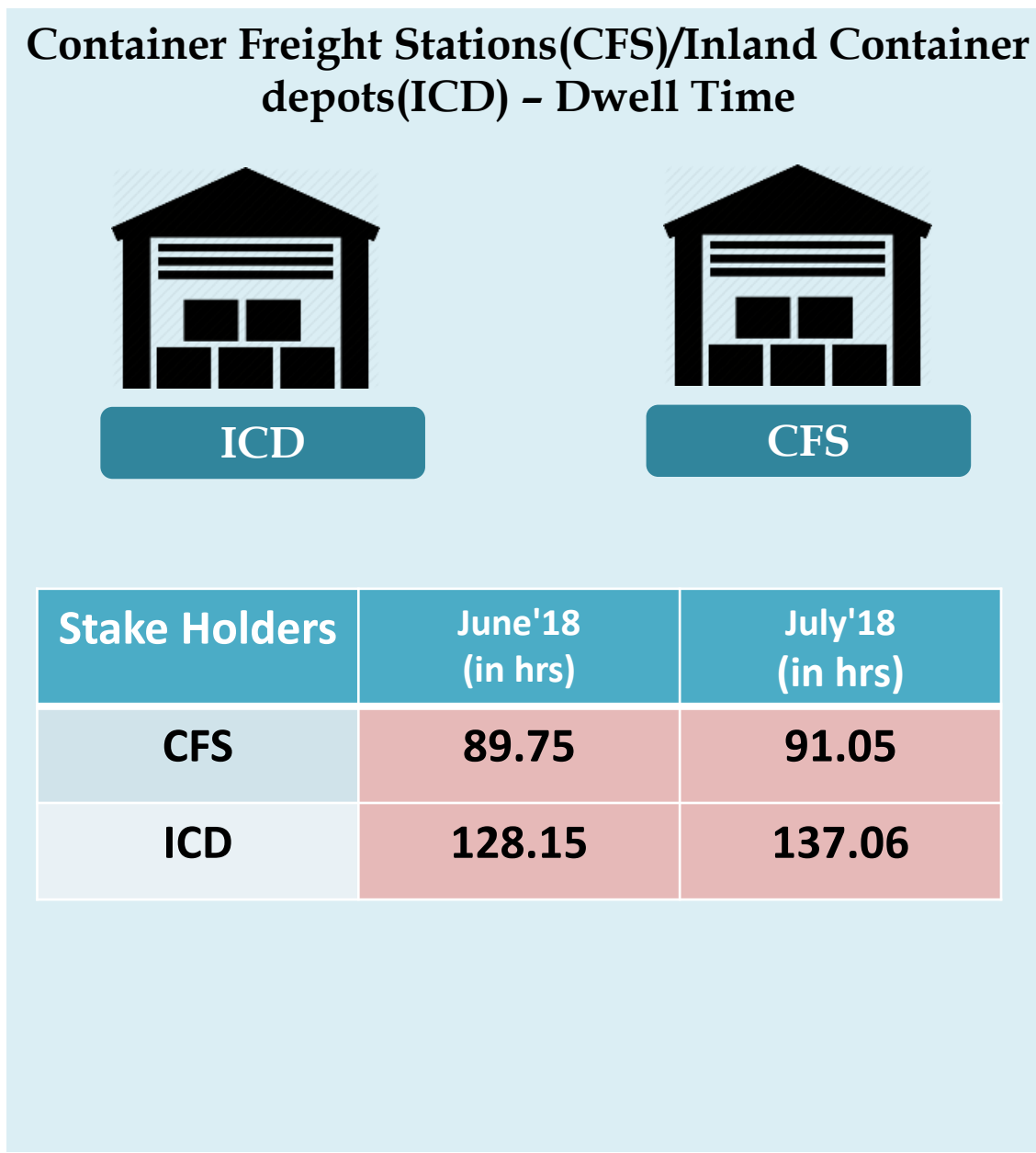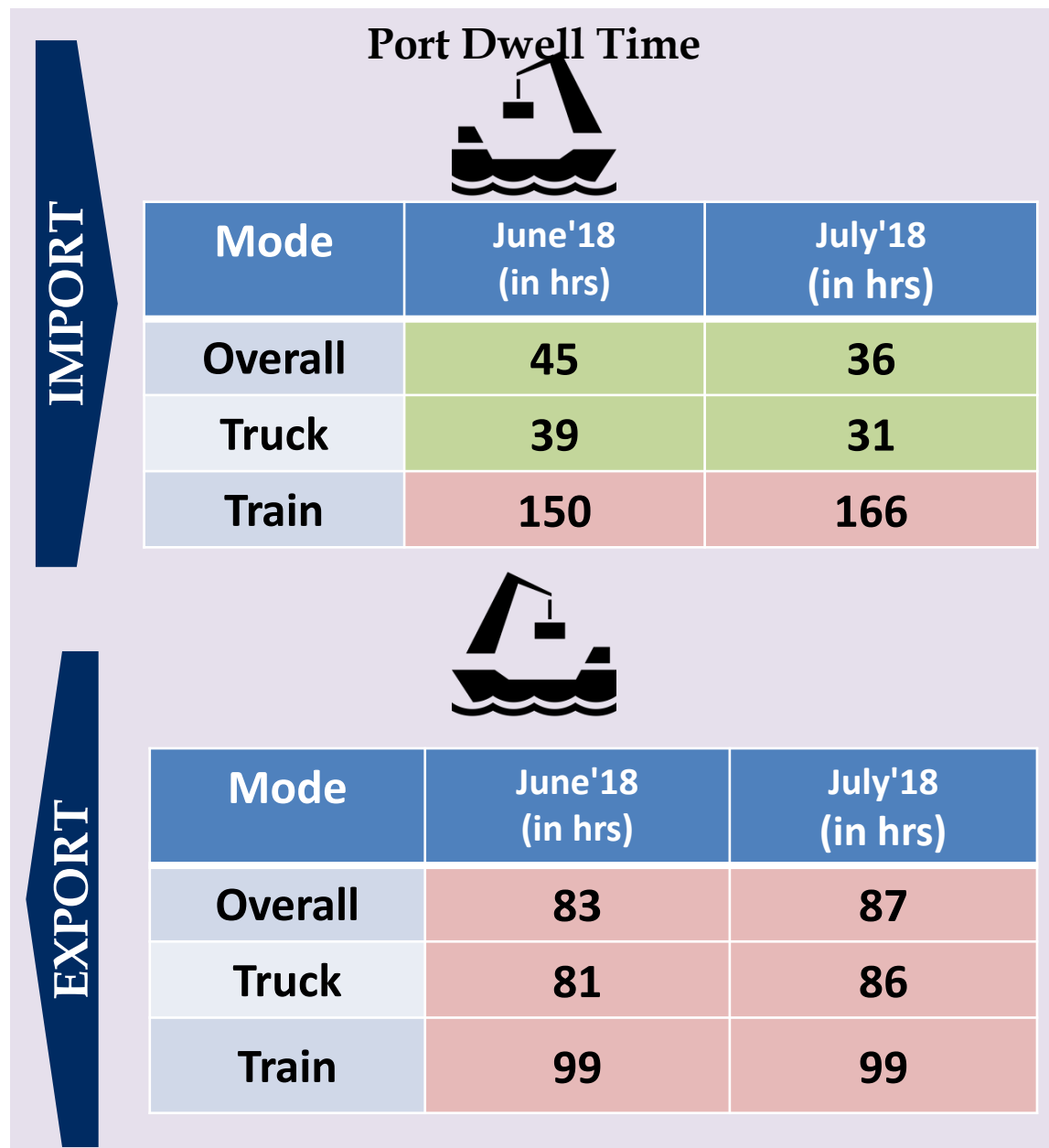| Gujarat Transit	June'18 (in hrs)	July'18 (in hrs)	Improvement (in %)	
Port to ICD	107.32	94.44	12%	⬆
ICD to Port	93.98	84.73	10%	⬆

Transit

There has been a notable improvement in average speed across 3 toll plaza routes as compared to June'18

Route	Avg. Speed June'18 (Km/Hr.)	Avg. Speed July'18'18 (Km/Hr.)	Improvement (in %)	
Bartan to Vasad	33.1	40.9	24%	⬆
Khalapur to Khedshivpur	17.2	27.9	62%	⬆
Daulatpura to Kherki	19.3	23.7	23%	⬆

Container Movement around Western Corridor

The below figure depicts performance of western corridor stakeholders for the month of July'18
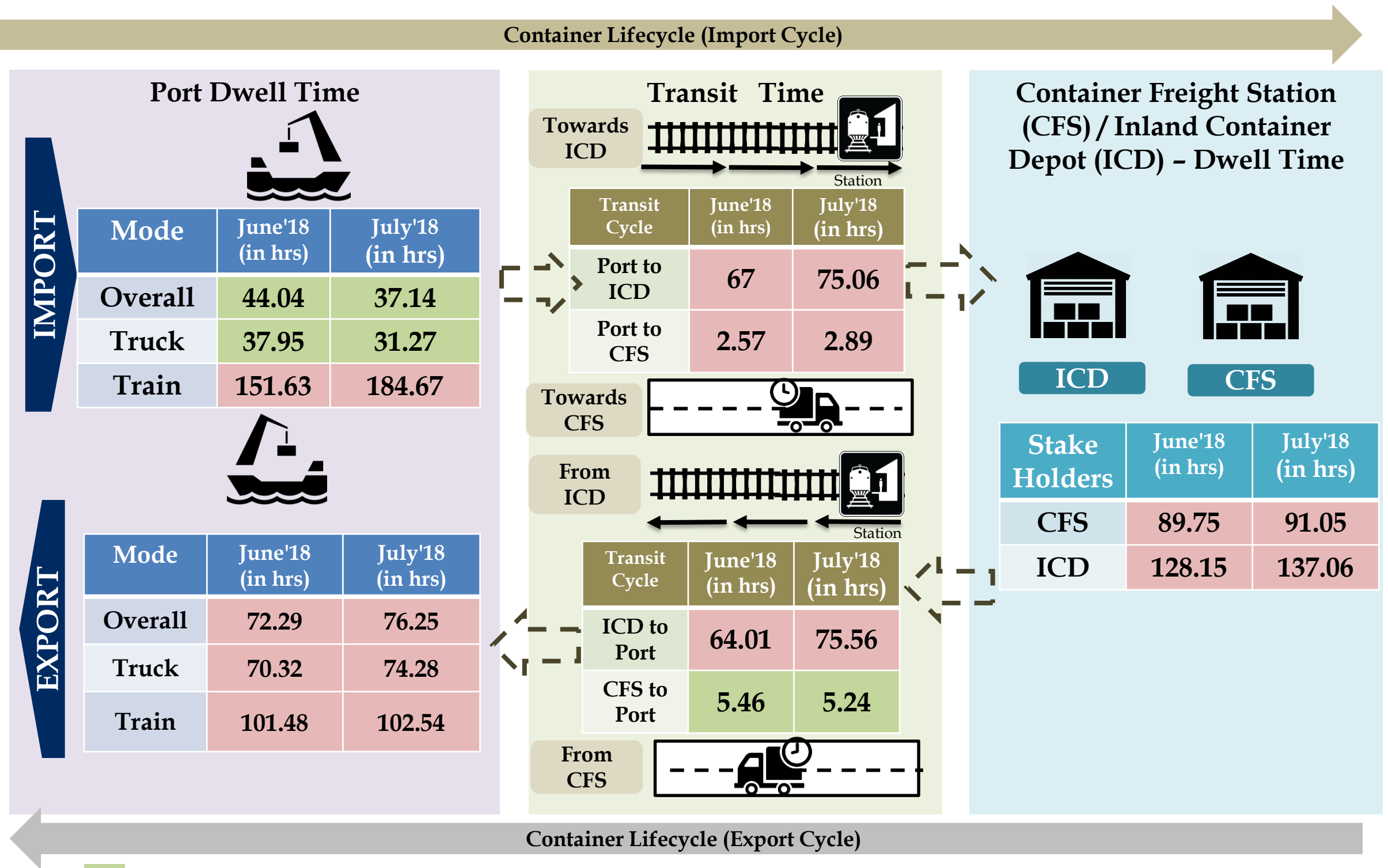- Ports i.e. JNPT, Mundra and Hazira,
- 44 CFS
- 14 ICD

IMPORT

Port Dwell Time

Mode	June'18 (in hrs)	July'18 (in hrs)
Overall	45	36
Truck	39	31
Train	150	166

EXPORT

Mode	June'18 (in hrs)	July'18 (in hrs)
Overall	83	87
Truck	81	86
Train	99	99

Container Freight Stations(CFS)/Inland Container depots(ICD) – Dwell Time

ICD   CFS

Stake Holders	June'18 (in hrs)	July'18 (in hrs)
CFS	89.75	91.05
ICD	128.15	137.06

The marked entries showcase the increase in performance as compared to June'18

The marked entries showcase the decrease in performance as compared to June'18

Container Movement around JNPT region

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The below figure depicts various stakeholders' performance in JNPT region for July'18

Container Lifecycle (Import Cycle) →

IMPORT

Port Dwell Time

Mode	June'18 (in hrs)	July'18 (in hrs)
Overall	44.04	37.14
Truck	37.95	31.27
Train	151.63	184.67

EXPORT

Mode	June'18 (in hrs)	July'18 (in hrs)
Overall	72.29	76.25
Truck	70.32	74.28
Train	101.48	102.54

Transit Time

Towards ICD

Transit Cycle	June'18 (in hrs)	July'18 (in hrs)
Port to ICD	67	75.06
Port to CFS	2.57	2.89

Towards CFS

From ICD

Transit Cycle	June'18 (in hrs)	July'18 (in hrs)
ICD to Port	64.01	75.56
CFS to Port	5.46	5.24

From CFS

Container Freight Station (CFS) / Inland Container Depot (ICD) – Dwell Time

ICD   CFS

Stake Holders	June'18 (in hrs)	July'18 (in hrs)
CFS	89.75	91.05
ICD	128.15	137.06

← **Container Lifecycle (Export Cycle)**

The marked entries showcase the increase in performance as compared to June'18

The marked entries showcase the decrease in performance as compared to June'18

Export/Import Cycle Container Movement around JNPT region

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IMPORT CYCLE DWELL TIME (July'18 – in hrs)			Compared to June'18	
PORT DWELL TIME	Overall Dwell Time of Truck and Train Bound Containers	37.14	16 %	⬆
	Port Dwell Time for Train Bound Containers	184.65	22 %	⬇
	Port Dwell time for Truck Bound Containers	31.27	18 %	⬆
	Port Dwell time Direct Port Delivery containers	51.75	8 %	⬆
	Port Dwell time Containers bound for CFS	29.47	17 %	⬆
	Port Dwell time Containers bound for ICD	119.28	14 %	⬇
TRANSIT TIME	Port to ICD	75.06	12 %	⬇
	Port to CFS	2.89	12 %	⬇
LCO DWELL TIME	CFS Dwell Time	91.05	14 %	⬇
	ICD Dwell Time	137.06	7 %	⬇

EXPORT CYCLE DWELL TIME (July'18– in hrs)			Compared to June'18	
PORT DWELL TIME	Overall Dwell Time of Truck and Train Bound Containers	76.25	5 %	⬇
	Port Dwell Time for Train Bound Containers	102.54	1%	⬇
	Port Dwell time for Truck Bound Containers	74.28	6 %	⬇
	Port Dwell time Direct Port Export containers	77.93	8 %	⬇
	Port Dwell time Containers bound from CFS	80.12	19 %	⬇
	Port Dwell time Containers bound from ICD	106.08	1 %	⬆
TRANSIT TIME	ICD to Port	75.56	18 %	⬇
	CFS to Port	5.24	4 %	⬆
LCO DWELL TIME	CFS Dwell Time	91.05	14 %	⬇
	ICD Dwell Time	137.06	7 %	⬇

⬇⬆ The arrows depict increase/decrease in performance of the stakeholders compared to June'18

JNPT region Port Performance

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The below tables depict the Dwell Time of containers based on their transit and occupancy at JNPT port

IMPORT

Port Dwell time based on transit type			
July'18	Direct Port Delivery containers	Containers bound for CFS	Containers bound for ICD
Dwell time	51.75 hrs	29.47 hrs	119.28 hrs

Port Dwell time based on container type				
July'18	Laden Containers		Empty Containers	
Volume	92%		8%	
Dwell time	38.06 hrs	13% ⬆	32.80 hrs	43% ⬆

EXPORT

Port Dwell time based on transit type			
July'18	Direct Port Export Containers	Containers bound from CFS	Containers bound from ICD
Dwell time	77.93 hrs	80.12 hrs	106.08 hrs

Port Dwell time based on container type				
July'18	Laden Containers		Empty Containers	
Volume	68%		32%	
Dwell time	73.39 hrs	2% ⬇	73.10 hrs	1% ⬇

⬇⬆ The arrows depict increase/decrease in performance of the stakeholders compared to June'18

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Performance Benchmarking based on Dwell time - Port Terminals

Performance benchmarking for Port Terminals covered under LDB project for July'18

Top Performing Terminal		Low Performing Terminal	
Gateway Terminals India (GTI)	51.21 hrs ⬆	Adani CMA Mundra Terminal (ACMTTL)	85.70 hrs ⬇

Average Dwell time of JNPCT Region: 60 hrs

⬇⬆ The arrows depict increase/decrease in performance of the stakeholders compared to June'18

Performance Index – Port Terminals

In order to assess the relative performance of Port, Container Freight Station and Inland Container Depot ,the relative dwell time as well as the volume of containers handled by them are depicted graphically in the form of an index to portray the performance of a particular organisation on the basis of these two combined factors i.e. Dwell time and Volume
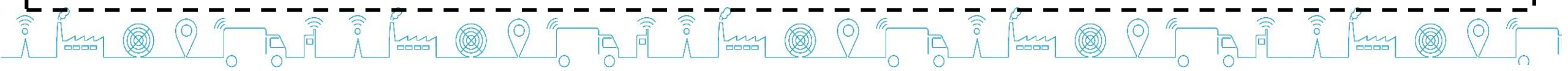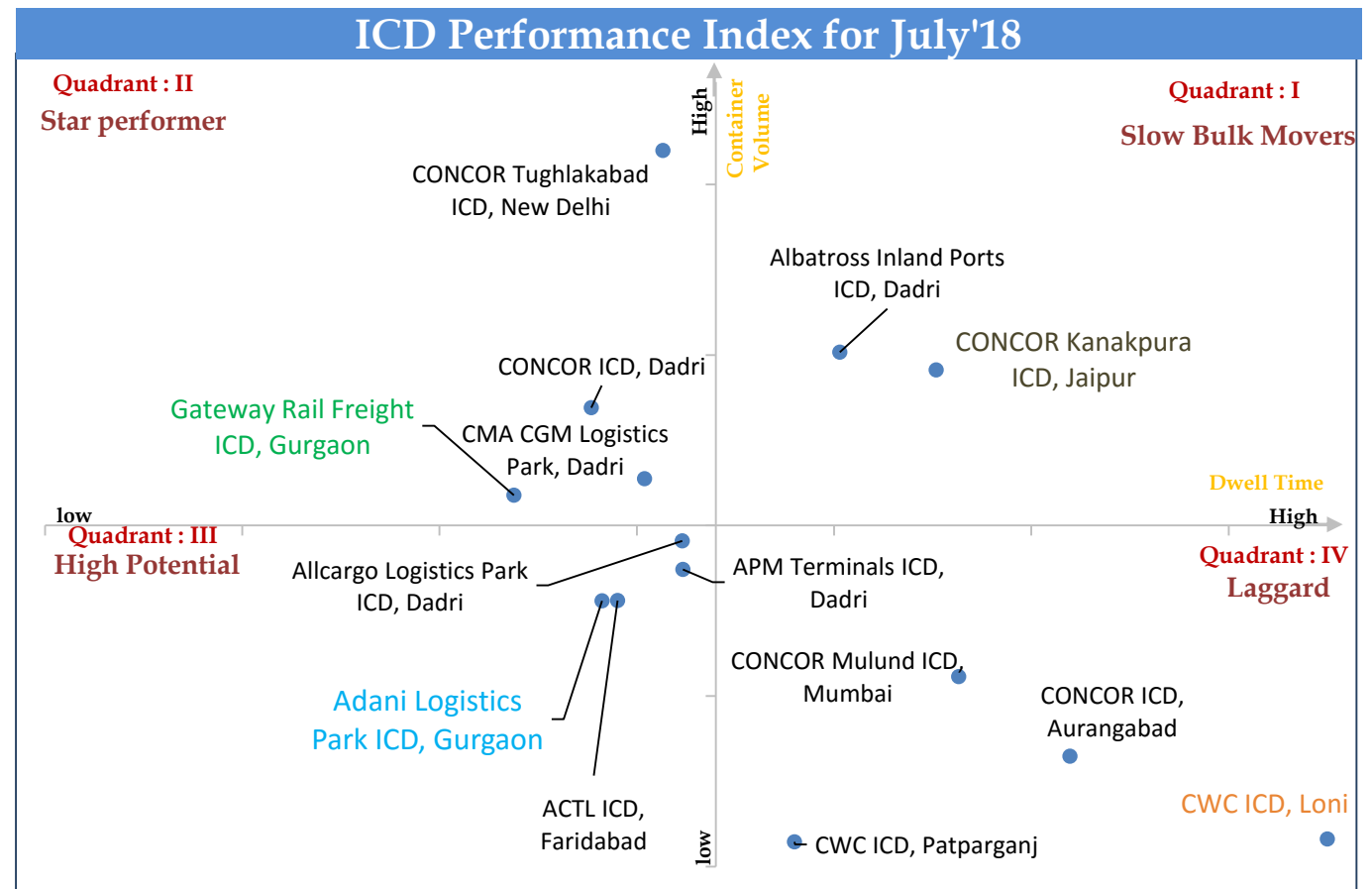
The figure depicts the Frequency Index i.e. volume by dwell time performance for Port terminals covered under LDB for July'18. The Quadrant II represents the high performing ports with high frequency Index i.e. high container volume at lower dwell time

Slow Bulk Movers : consist of Ports which have catered higher container volume at higher dwell time

Star Performer: consist of Ports which have catered relatively high container volume in lower dwell time

High Potential : consist of Ports which have catered relatively lower container volume in lower dwell time

Laggard : consist of Ports which have catered relatively lower container volume at higher dwell time

Port Terminal Performance Index : July'18

Quadrant : II
Star performer

Quadrant : I
Slow Bulk Movers

Container Volume — High

GTI

JNPCT

low / High

Dwell Time

Quadrant : III
High Potential

Quadrant : IV
Laggard

NSIGT

NSICT

BMCT

low
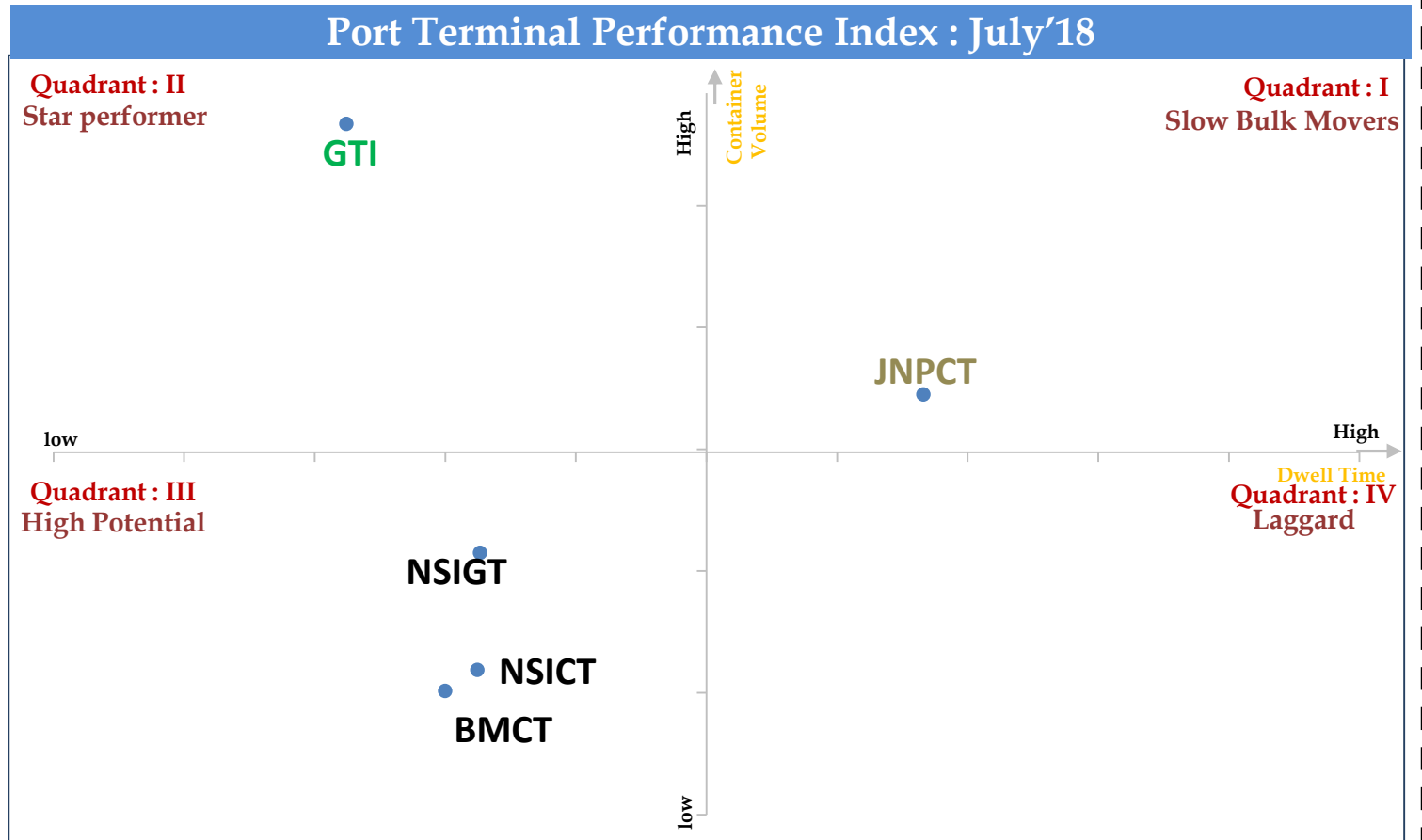
* Kindly note, this analysis is for the Port Terminals covered under LDB analysis i.e. - 10

ICD: Benchmarking and Performance Index

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Performance Benchmarking based on Dwell time - ICD

Performance benchmarking for ICDs covered under LDB project for July'18

Top Performing ICD		Low Performing ICD	
Gateway Rail Freight ICD, Gurgaon	117.54 hrs ⬆	CWC ICD, Loni	233.92 hrs ⬇

⬇⬆ The arrows depict increase/decrease in performance of the stakeholders compared to June'18

Performance Index – Inland Container Depots (ICD)

In order to assess the relative performance of Port, Container Freight Station and Inland Container Depot ,the relative dwell time as well as the volume of containers handled by them are depicted graphically in the form of an index to portray the performance of a particular organisation on the basis of these two combined factors i.e. Dwell time and Volume

The figure depicts the Frequency Index i.e. volume by dwell time performance for Port terminals covered under LDB for July'18. The Quadrant II represents the high performing ports with high frequency Index i.e. high container volume at lower dwell time

Slow Bulk Movers : consist of ICD which have catered higher container volume at higher dwell time

Star Performer: consist of ICD which have catered relatively high container volume in lower dwell time

High Potential : consist of ICD which have catered relatively lower container volume in lower dwell time

Laggard : consist of ICD which have catered relatively lower container volume at higher dwell time

ICD Performance Index for July'18

Quadrant : II
Star performer

Quadrant : I
Slow Bulk Movers

Container Volume — High

CONCOR Tughlakabad ICD, New Delhi

Albatross Inland Ports ICD, Dadri

CONCOR Kanakpura ICD, Jaipur

CONCOR ICD, Dadri

Gateway Rail Freight ICD, Gurgaon

CMA CGM Logistics Park, Dadri

Dwell Time — High
low — High

Quadrant : III
High Potential

Quadrant : IV
Laggard

Allcargo Logistics Park ICD, Dadri

APM Terminals ICD, Dadri

Adani Logistics Park ICD, Gurgaon

CONCOR Mulund ICD, Mumbai

CONCOR ICD, Aurangabad

ACTL ICD, Faridabad

CWC ICD, Loni

CWC ICD, Patparganj

The below analysis depicts the container transit turn around time (TTAT) at JNPT port along with the container volume bifurcation based on their occupancy i.e. empty and laden in both import/ export cycle .

Transit Turn Around Time (TTAT) = Port In Export timestamp – Port Out Import Timestamp
The TTAT showcases the time taken by container to complete its import and export cycle, excluding the time spend at port terminal

Component	Volume	Turn Around Time (TAT)	
Containers Imported as Laden & Exported as Laden	81.8%	-	Overall Turn Around
Containers Imported as Empty & Exported as Laden Ⓐ	8.5%	-	**18 days**
Containers Imported as Laden & Exported as Empty Ⓑ	9.4%	14 Days	
Containers Imported as Empty & Exported as Empty	0.3%		

8.5% of the container in AMJ'18 quarter where imported empty and then where exported laden, where as there where 9.4% containers which entered the country as laden containers in import cycle but went out empty in export cycle. Such containers could have been reutilized. It would have led to:
• Less carbon emission
• Better Inventory management
• Operational Cost optimization

SECTION II:
LDB ANALYTICS

Import Cycle Analysis

JNPT Region: Import Cycle
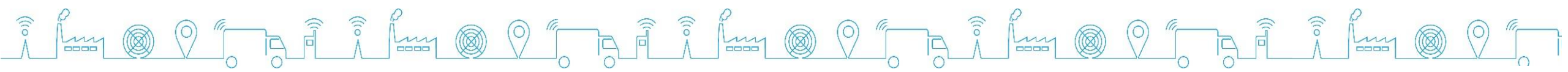
The below tables depict the port dwell time performance at JNPT port for truck and train bound containers in import cycle
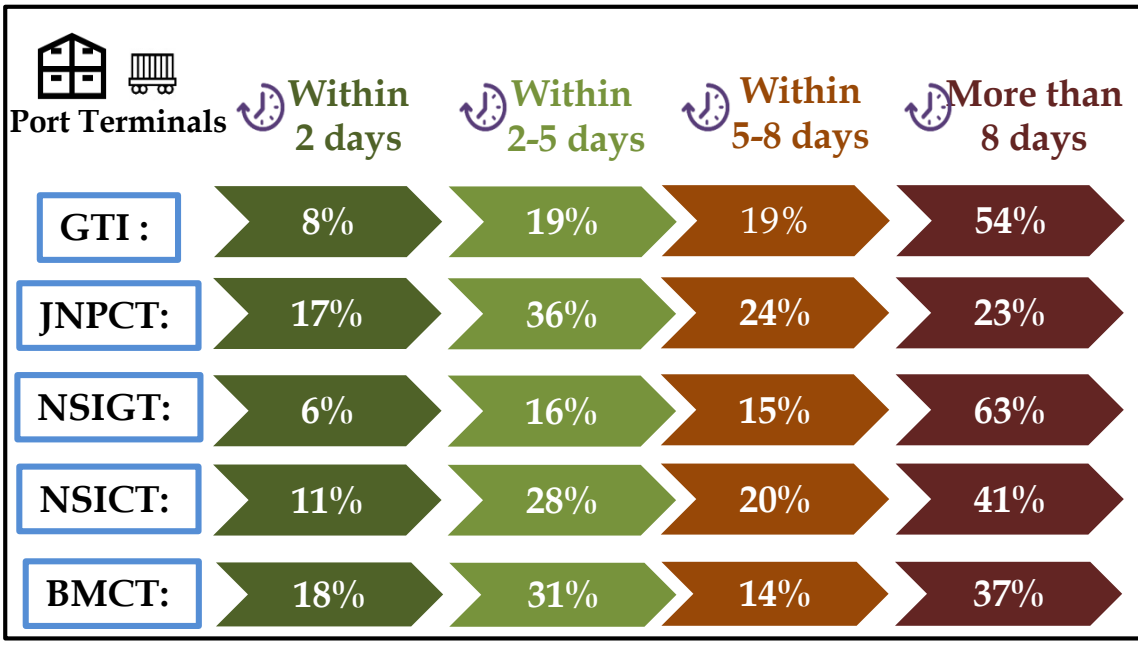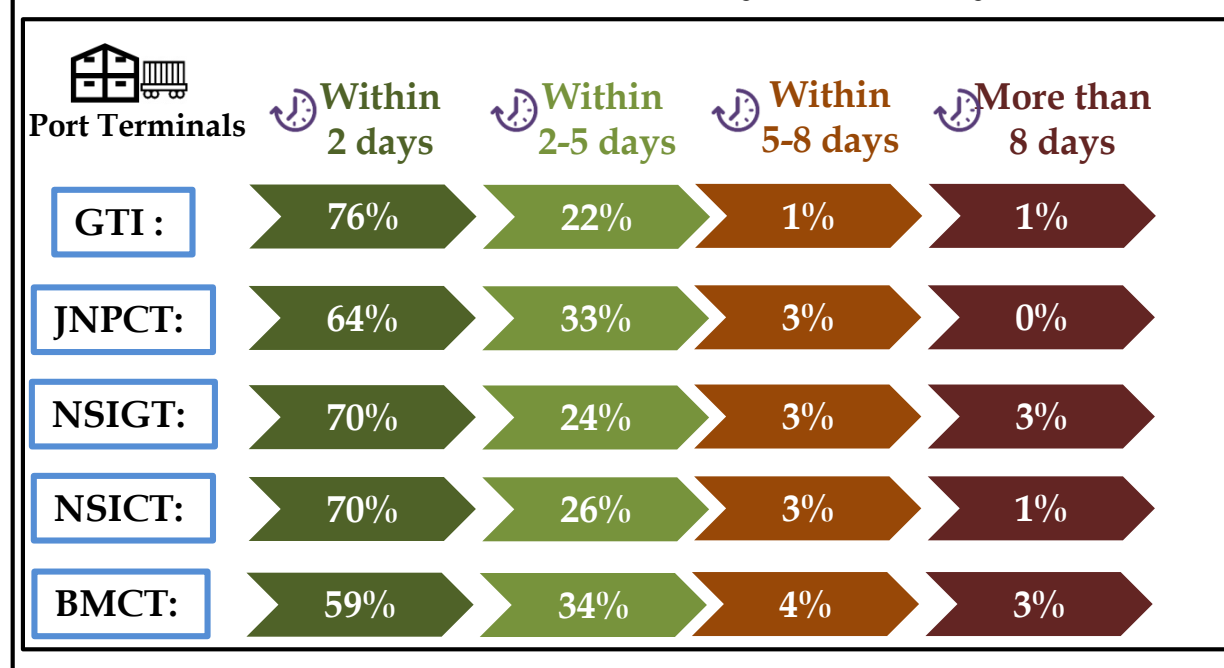
PORT IMPORT via TRAIN
(16% of total import volume at JNPT Port)

The Port Dwell time data for train bound container movement in import cycle is depicted below. Port dwell time is the time duration between the entry of the container in Port terminal to the time it moves out of the Port terminal

Port	June'18 (in hrs)	July'18 (in hrs)
GTI	135.1	203.92
JNPCT	120.8	114.47
NSIGT	182.5	254.73
NSICT	176.8	149.49
BMCT	211.9	124.24

Container Handled: Day wise (July'18)

Port Terminals	Within 2 days	Within 2-5 days	Within 5-8 days	More than 8 days
GTI :	8%	19%	19%	54%
JNPCT:	17%	36%	24%	23%
NSIGT:	6%	16%	15%	63%
NSICT:	11%	28%	20%	41%
BMCT:	18%	31%	14%	37%

PORT IMPORT via TRUCK
(84% of total import volume at JNPT Port)

The Port Dwell time data for Truck bound container movement in import cycle is depicted below. Port dwell time is the time duration between the entry of the container in Port terminal to the time it moves out of the Port terminal

Port	June'18 (in hrs)	July'18 (in hrs)
GTI	32.6	26.32
JNPCT	42.4	36.80
NSIGT	39.0	30.32
NSICT	47.8	34.01
BMCT	45.7	39.30

Container Handled: Day wise (July'18)

Port Terminals	Within 2 days	Within 2-5 days	Within 5-8 days	More than 8 days
GTI :	76%	22%	1%	1%
JNPCT:	64%	33%	3%	0%
NSIGT:	70%	24%	3%	3%
NSICT:	70%	26%	3%	1%
BMCT:	59%	34%	4%	3%

JNPT region Port Performance Import Cycle

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The below tables depict the detailed JNPT region port performance in the month of July'18

JNPCT

Port Dwell time based on transit type

July'18	Direct Port Delivery containers	Containers bound for CFS	Containers bound for ICD
Dwell time (in hrs)	39.42	38.02	78.54

Port Dwell time based on container type

July'18	Laden Containers	Empty Containers
Volume	31730	2583
Dwell time (in hrs)	42.83	35.91

GTI

Port Dwell time based on transit type

| July'18	Direct Port Delivery containers	Containers bound for CFS	Containers bound for ICD
Dwell time (in hrs)	54.45	24.41	141.38

Port Dwell time based on container type

July'18	Laden Containers	Empty Containers
Volume	54983	3212
Dwell time (in hrs)	32.47	25.22

JNPT region Port Performance Import Cycle

The below tables depict the detailed JNPT region port performance in the month of July'18

NSICT

Port Dwell time based on transit type

July'18	Direct Port Delivery containers	Containers bound for CFS	Containers bound for ICD
Dwell time (in hrs)	-	29.88	110.42

Port Dwell time based on container type

July'18	Laden Containers	Empty Containers
Volume	7906	1479
Dwell time (in hrs)	43.95	35.15

NSIGT

Port Dwell time based on transit type

July'18	Direct Port Delivery containers	Containers bound for CFS	Containers bound for ICD
Dwell time (in hrs)	-	30.84	224.89

Port Dwell time based on container type

July'18	Laden Containers	Empty Containers
Volume	21256	1519
Dwell time (in hrs)	42.26	23.05

BMCT

Port Dwell time based on transit type

July'18	Direct Port Delivery containers	Containers bound for CFS	Containers bound for ICD
Dwell time (in hrs)	67.10	34.40	-

Port Dwell time based on container type

July'18	Laden Containers	Empty Containers
Volume	8060	1310
Dwell time (in hrs)	40.10	73.30

JNPT Region Import Cycle: Congestion Analysis

The below figure shows the congestion around JNPT port in import cycle for July'18. The movement of containers from JNPT port to adjacent CFS(s) in import cycle has been analyzed. Based on the movement, congestion is highlighted in the area. The CFS(s) are divided into cluster based on their vicinity
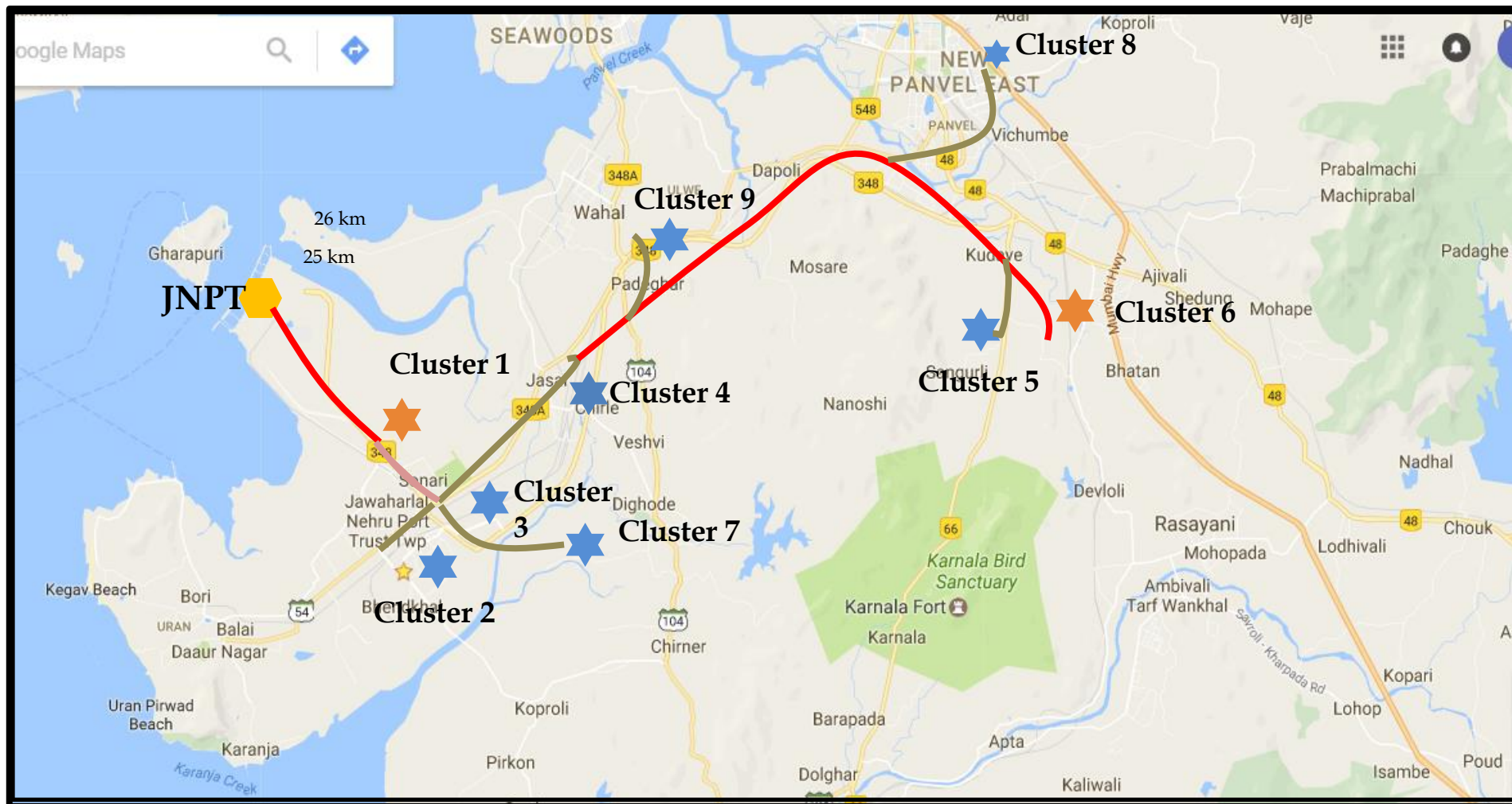
Clusters with bottleneck	
Cluster 1	JNPT Area
Cluster 6	Salva apta rd area, Bangalore highwa

Clusters without bottleneck	
Cluster 2	Bhendkhal area, Khopate road
Cluster 3	Sonari area,JNPT road
Cluster 4	Chirle area , JNPT road
Cluster 5	Plaspa area, Coachi kanyakumari Highway
Cluster 7	Patilpada area, Khopate JNPT road
Cluster 8	Taloja, Navi Mumbai
Cluster 9	Padhegar area

Note : Please find the respective CFS in each cluster in annexure section

Legends
- High Congestion
- Medium Congestion
- Low Congestion
- Cluster with bottleneck
- Cluster without bottleneck

GTI Terminal
Congestion Level
Import Cycle :-

JNPCT Terminal
Congestion Level
Import Cycle :-

NSICT Terminal
Congestion Level
Import Cycle :-

NSIGT Terminal
Congestion Level
Import Cycle :-

Note : 1) Congestion is measured w.r.t actual time taken to cover the respective distance between clusters and terminals
2) Analysis consist of CFS covered under LDB project

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The below table and graphs depict the container movement across JNPT port region in Import cycle

Truck
HEAT MAP : OVERALL MUMBAI REGION

Region	July'18
Mumbai region	64%
NH3	2%
Pune	13%
NH8	11%
others	10%

The figure depicts the movement of containers via truck in and around Mumbai region.

Heat Map : July'18
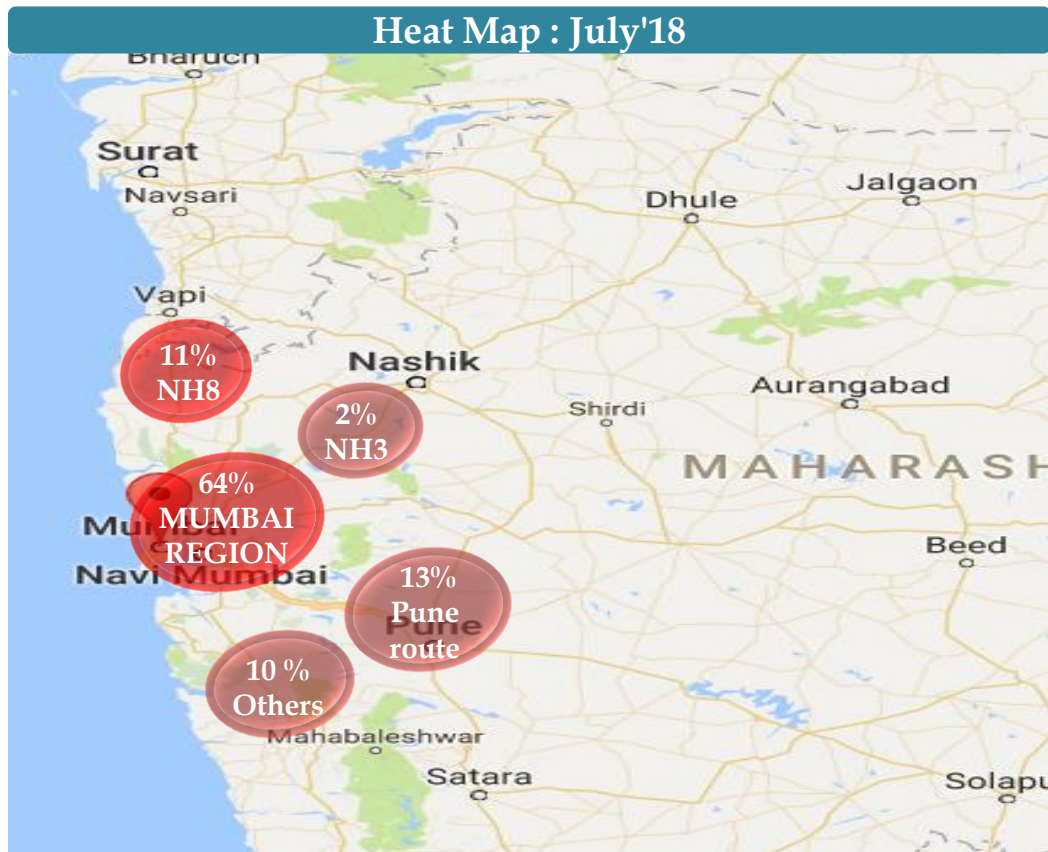
Train
VOLUME WISE CONTAINER MOVEMENT

Region	July'18
Vadadora Route	24 %
Bhopal Route	13 %
Nagpur Route	7 %
Panvel Route	56 %

The map shows the volume wise container movement through different railway routes in import cycle for **July'18**

Volume Wise Container Movement: July'18
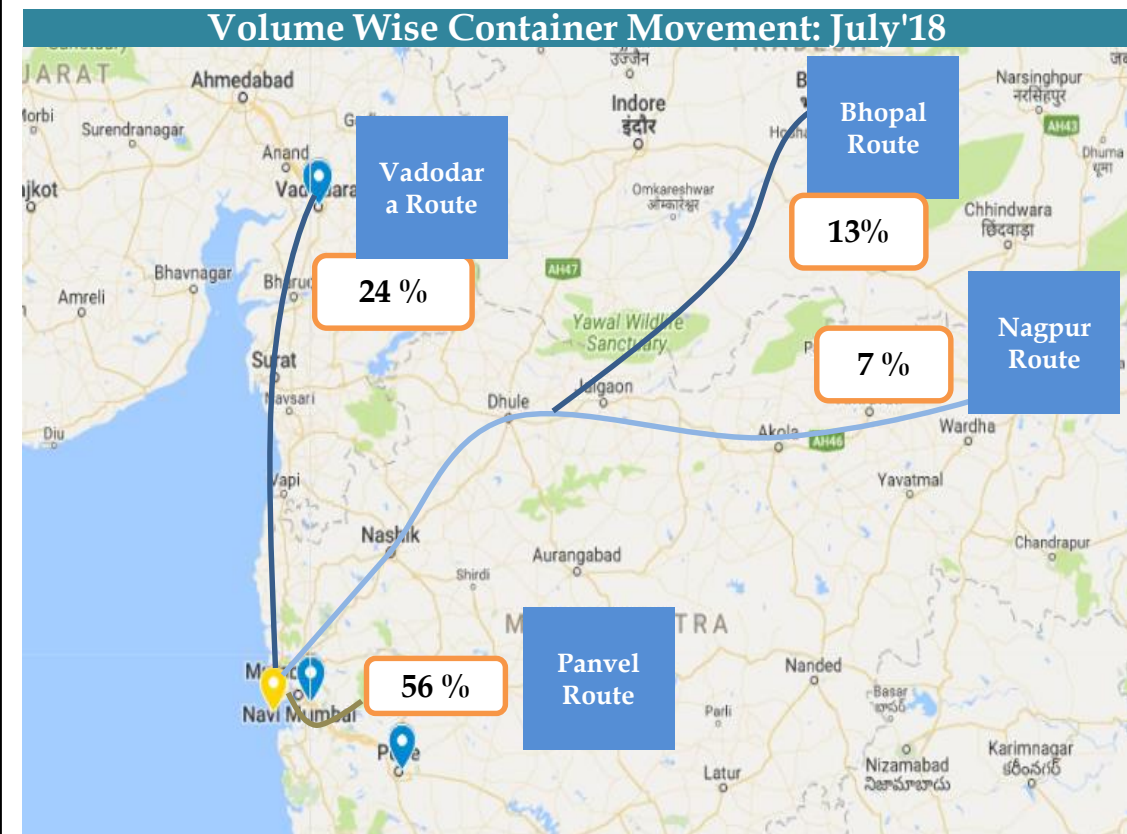
The below table depicts the container movement across the toll plazas connected with JNPT port. The movement is depicted in term of average speed by which container moved across these specific toll plaza routes
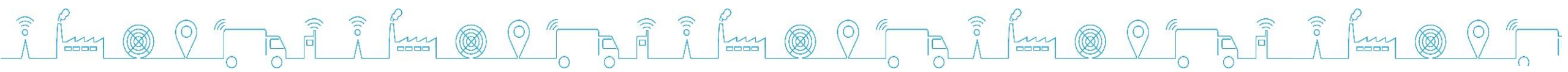
			Avg. Travel Time & Speed between Toll Plazas (July'18)		
Source	Destination Toll Plaza	Inter Distance (Km)	Avg. Travel Time (Hr)	June'18 Avg. Speed (Km/Hr.)	July'18 Avg. Speed (Km/Hr.)
JNPT	Khaniwade	94	7.3	11.9	11.7
JNPT	Khalapur	60	4.1	14.4	5.2
Khaniwade	Charoti	50	1.30	31.6	31.8
Charoti	Boriach	126	4.60	14.4	25.6
Boriach	Bharthan	142	4.30	18.7	26.8
Bharthan	Vasad	60	1.53	33.1	40.9
Khalapur	Khedshivpur	105	3.7	17.2	27.9
Daulatpura	Kherki	199	8.8	19.3	23.7

Map
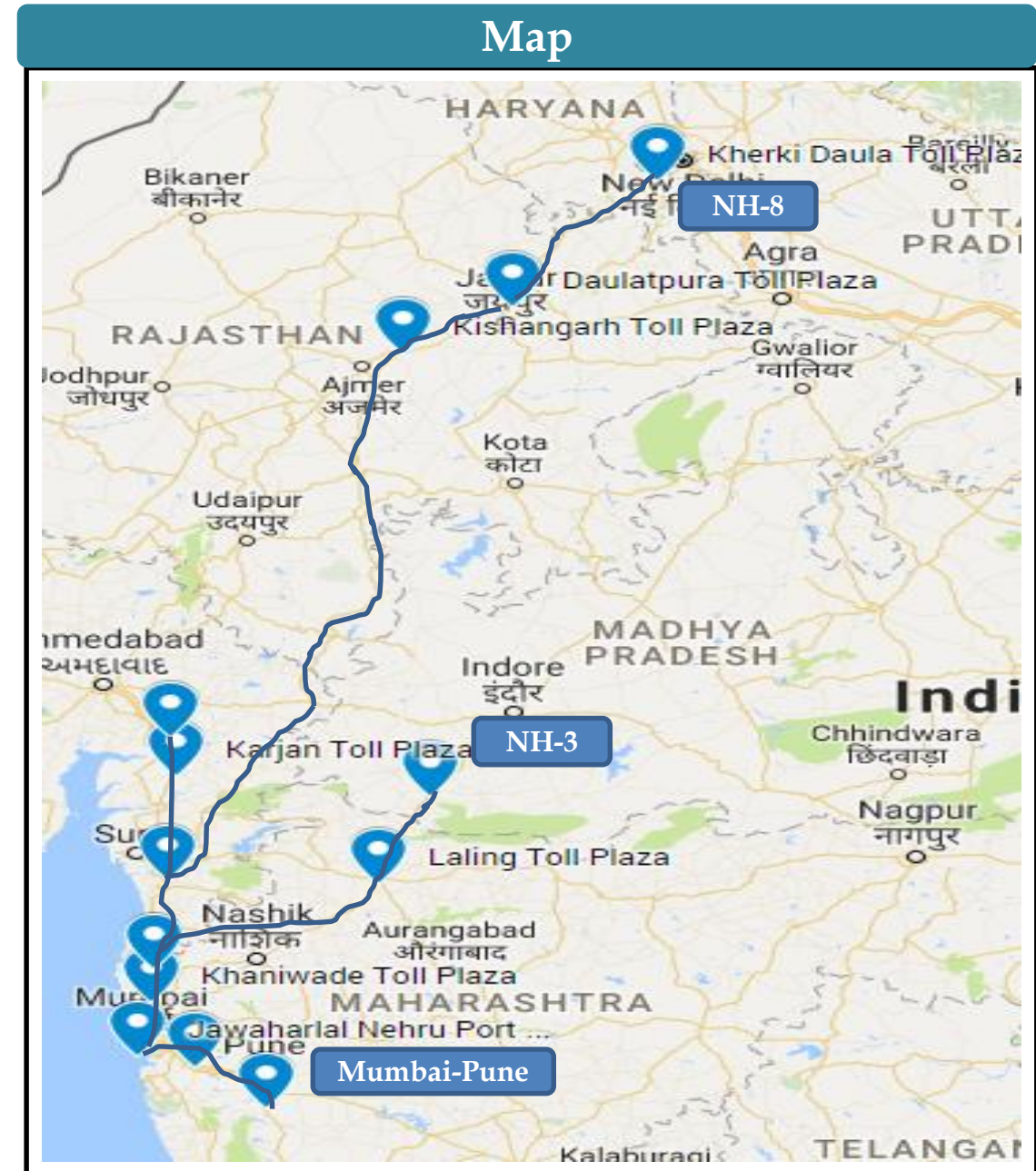
Note: Analysis only includes the toll plazas covered under LDB project

Export Cycle Analysis

The below table(s) depicts the port dwell time performance at JNPT port for truck and train bound containers in export cycle

PORT EXPORT via TRAIN
(12% of total export container volume)

The Port Dwell time data for train bound container movement in Export cycle is depicted below. Port dwell time is the time duration between the entry of the container in Port terminal to the time it moves out of the Port terminal

Port	June'18 (in hrs)	July'18 (in hrs)
GTI	94.29	87.39
JNPCT	107.49	139.45
NSIGT	107.44	107.92
NSICT	118.61	112.57
BMCT	-	-

Container Handled: Day wise (July'18)

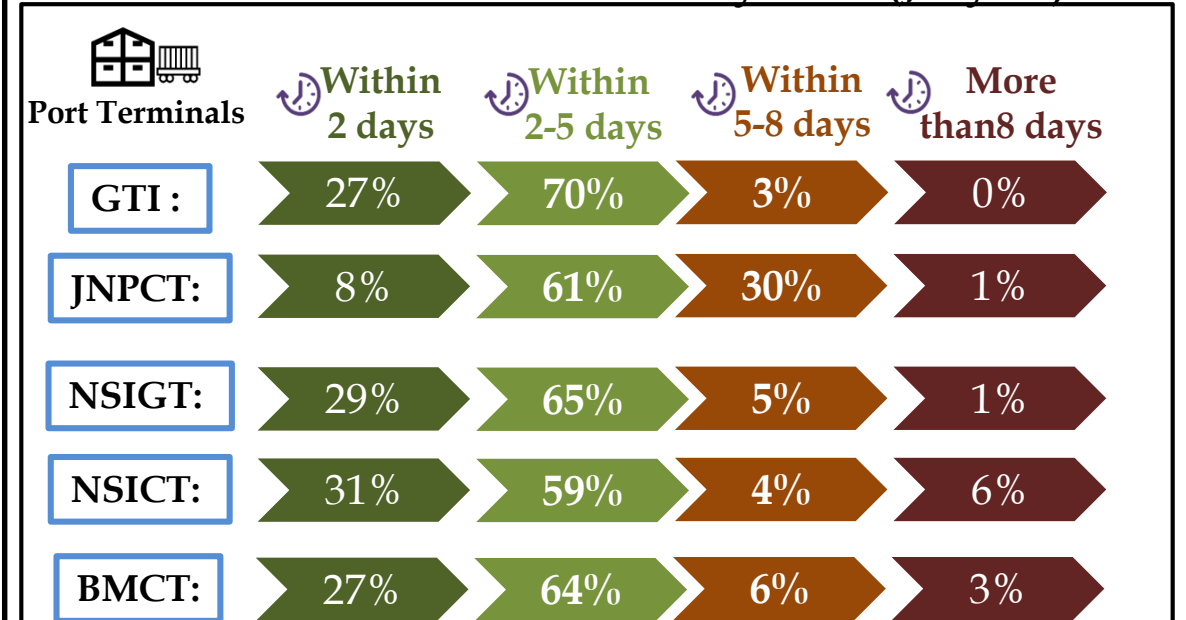| Port Terminals	Within 2 days	Within 2-5 days	Within 5-8days	More than 8days
GTI :	25%	41%	26%	8%
JNPCT:	7%	33%	34%	26%
NSIGT:	14%	42%	35%	9%
NSICT:	16%	37%	33%	14%

PORT EXPORT via TRUCK
(88% of total export container volume)

The Port Dwell time data for Truck bound container movement in Export cycle is depicted below. Port dwell time is the time duration between the entry of the container in Port terminal to the time it moves out of the Port terminal

Port	June'18 (in hrs)	July'18 (in hrs)
GTI	64.37	64.59
JNPCT	85.39	103.23
NSIGT	67.06	66.81
NSICT	61.47	66.89
BMCT	78.33	68.59

Container Handled: Day wise (July'18)

Port Terminals	Within 2 days	Within 2-5 days	Within 5-8 days	More than8 days
GTI :	27%	70%	3%	0%
JNPCT:	8%	61%	30%	1%
NSIGT:	29%	65%	5%	1%
NSICT:	31%	59%	4%	6%
BMCT:	27%	64%	6%	3%

JNPT region Port Performance Export Cycle

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The below tables depict the Dwell Time of containers based on their transit and occupancy at JNPT port

JNPCT

Port Dwell time based on transit type			
July'18	Direct Port Export containers	Containers bound from CFS	Containers bound from ICD
Dwell time (in hrs)	103.08	109.11	138.54

Port Dwell time based on container type		
July'18	Laden Containers	Empty Containers
Volume	11802	12760
Dwell time (in hrs)	102.95	100.63

GTI

Port Dwell time based on transit type			
July'18	Direct Port Export containers	Containers bound from CFS	Containers bound from ICD
Dwell time (in hrs)	67.99	64.77	104.61

Port Dwell time based on container type		
July'18	Laden Containers	Empty Containers
Volume	25629	12199
Dwell time (in hrs)	67.05	59.40

JNPT region Port Performance Export Cycle

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The below tables depict the Dwell Time of containers based on their transit and occupancy at JNPT port

NSICT

Port Dwell time based on transit type			
July'18	Direct Port Export containers	Containers bound from CFS	Containers bound from ICD
Dwell time (in hrs)	-	66.18	160.18

Port Dwell time based on container type		
July'18	Laden Containers	Empty Containers
Volume	8138	2006
Dwell time (in hrs)	68.52	59.72

NSIGT

Port Dwell time based on transit type			
July'18	Direct Port Export containers	Containers bound from CFS	Containers bound from ICD
Dwell time (in hrs)	-	67.32	82.42

Port Dwell time based on container type		
July'18	Laden Containers	Empty Containers
Volume	11995	520
Dwell time (in hrs)	66.89	76.39

BMCT

Port Dwell time based on transit type			
July'18	Direct Port Export containers	Containers bound from CFS	Containers bound from ICD
Dwell time (in hrs)	-	66.53	-

Port Dwell time based on container type		
July'18	Laden Containers	Empty Containers
Volume	5597	2734
Dwell time (in hrs)	69.20	66.12

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The below figure shows the congestion around JNPT port in export cycle for July'18. The movement of containers from JNPT port to adjacent CFS(s) in export cycle has been analysed. Based on the movement, congestion is highlighted in the area. The CFS(s) are divided into cluster based on their vicinity
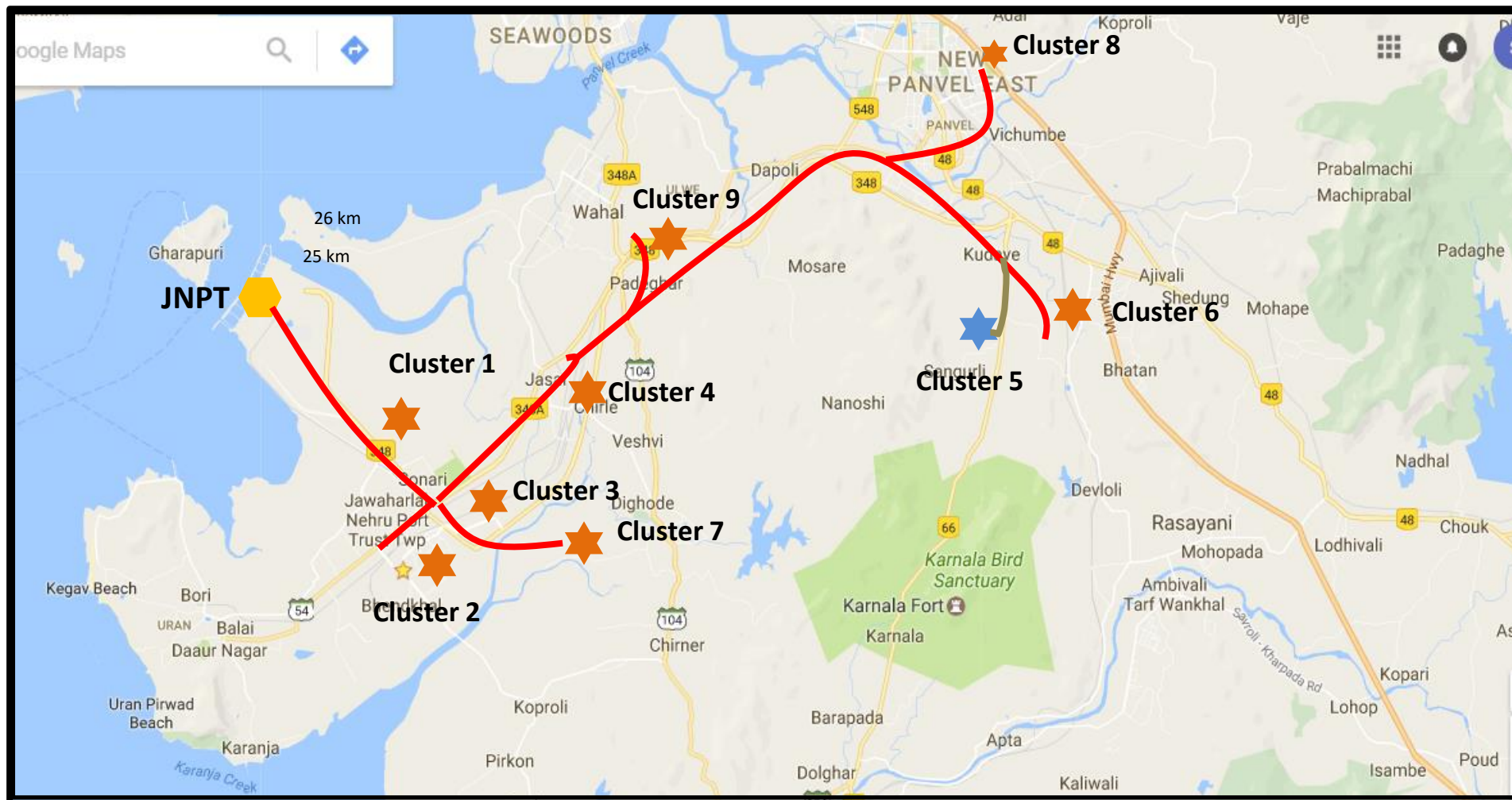
Cluster with bottleneck

Cluster 1	JNPT Area
Cluster 2	Bhendkhal area, Khopate road
Cluster 3	Sonari area, JNPT road
Cluster 4	Chirle area , JNPT road
Cluster 6	Salva apta rd area, Bangalore highway
Cluster 7	Patilpada area, Khopate JNPT road
Cluster 8	Taloja, Navi Mumbai
Cluster 9	Padhegar area

Cluster without bottleneck

Cluster 5	Plaspa area, Coachi kanyakumari Highway

Note : Please find the respective CFS in each cluster in annexure section

Legends
- **High Congestion** (red)
- **Medium Congestion** (olive)
- **Low Congestion** (pink)
- ★ **Cluster with bottleneck** (orange)
- ★ **Cluster without bottleneck** (blue)

GTI Terminal
Congestion Level
Export Cycle :- (red)

JNPCT Terminal
Congestion Level
Export Cycle :- (pink)

NSICT Terminal
Congestion Level
Export Cycle :- (olive)

NSIGT Terminal
Congestion Level
Export Cycle :- (olive)

Note : 1) Congestion is measured w.r.t actual time taken to cover the respective distance between clusters and terminals
2) Analysis consist of CFS covered under LDB project

The below table and graphs depicts the container movement across JNPT port region in Export cycle

To JNPT Port From	
Route	Percentage of Container Movement
From Wardha Jn. To JNPT Port (Nagpur Route)	8 %
From Vadodara Jn To JNPT Port (Vadodara Route)	19 %
From Panvel Jn To JNPT Port (Panel Route)	56 %
From Jalgaon Jn To JNPT Port (Bhopal Route)	17 %

The map shows the volume wise container movement through different railway routes in export cycle for July'18

CFS and ICD Performance

CFS and ICD Performance
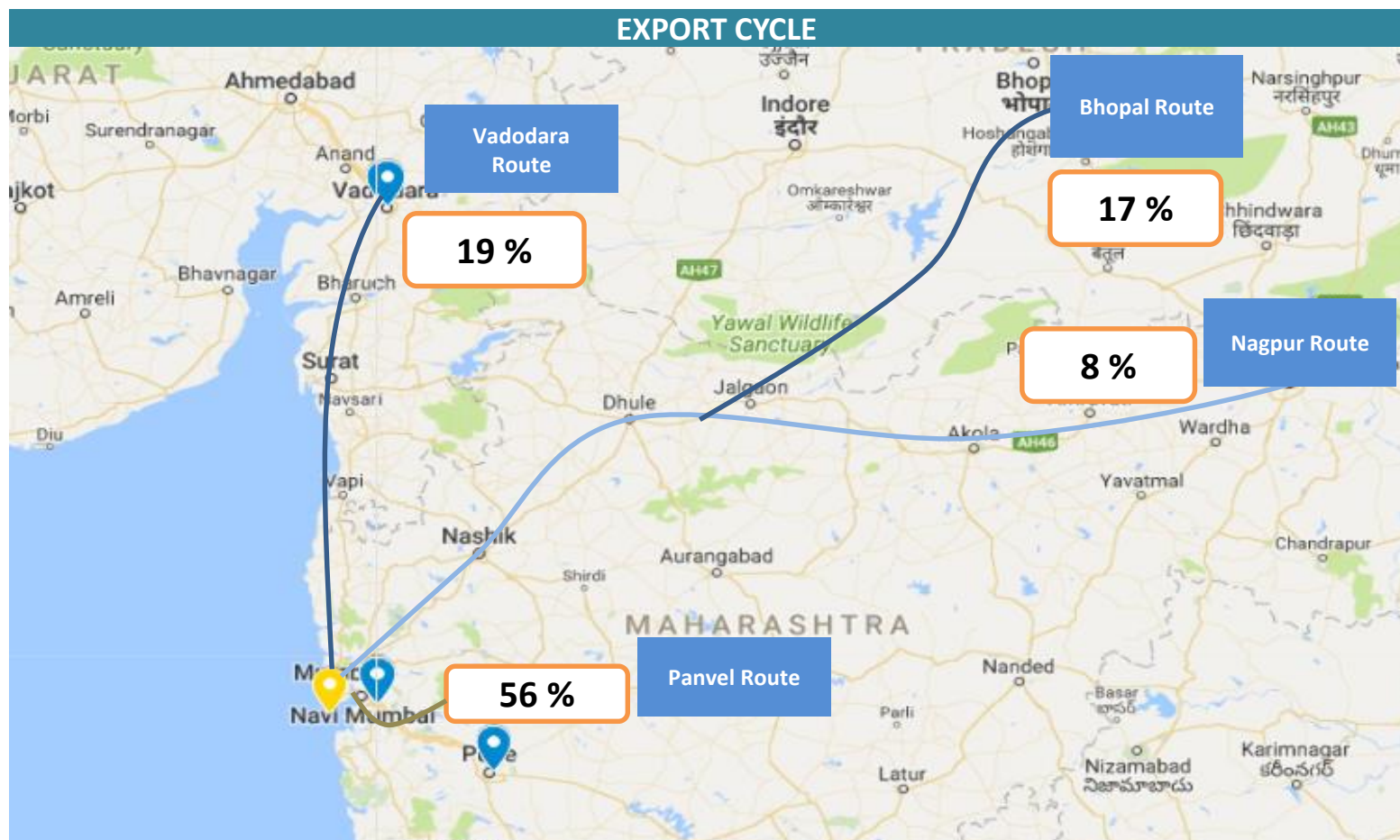
JNPT region CFS : CFS DWELL TIME ANALYSIS

Below table and graphs show the dwell time of the respective CFSs for the month of July'18

CFS Dwell Time (in hrs)						
CFS	June'18	July'18		CFS	June'18	July'18
All Cargo Logistics CFS, Navi Mumbai	88.69	84.2		JWR CFS	61.62	66.22
Ameya Logistics CFS, Navi Mumbai	85.51	87.71		Maersk Annex (APM)CFS, Navi Mumbai	103.78	112.54
APM (Maersk India) CFS, Navi Mumbai	87.26	99.32		Navkar Corporation Yard 1 CFS, Panvel	104.02	106.03
Apollo Logisolutions CFS, Panvel	84.46	90.19		Navkar Corporation Yard 2 CFS, Panvel	84.98	101.57
Ashte Logistics CFS, Panvel	99.62	98.75		Navkar Corporation Yard 3 CFS, Panvel	94.45	94.16
Balmer & Lawrie CFS, Navi Mumbai	92.06	100.64		Ocean Gate CFS, Panvel	92.34	91.06
Continental Warehousing CFS, Navi Mumbai	82.58	79.26		Punjab Conware CFS, Navi Mumbai	76.23	88.73
CWC Hind Terminal CFS, Navi Mumbai	94.40	100.06		Seabird CFS, Navi Mumbai	97.51	97.22
Dronagiri Rail Terminal CFS, Navi Mumbai	79.89	58.30		Speedy Multimode CFS, JNPT	70.04	73.77
Gateway Distriparks CFS, Navi Mumbai	80.47	93.81		Take Care Logistics CFS	108.96	118.05
Indev Logistics CFS, Panvel	88.38	93.68		TG Terminals CFS	77.98	97.28
International Cargo Terminal CFS	96.32	77.91		Transindia Logistics Park, Navi Mumbai	92.97	71.28
International Cargo Terminals (ULA) CFS, Navi Mumbai	96.46	90.09		Vaishno Logistics CFS, Navi Mumbai	86.41	83.52

CFS – DWELL OVERVIEW (IN HRS)

Average: 91 hrs.
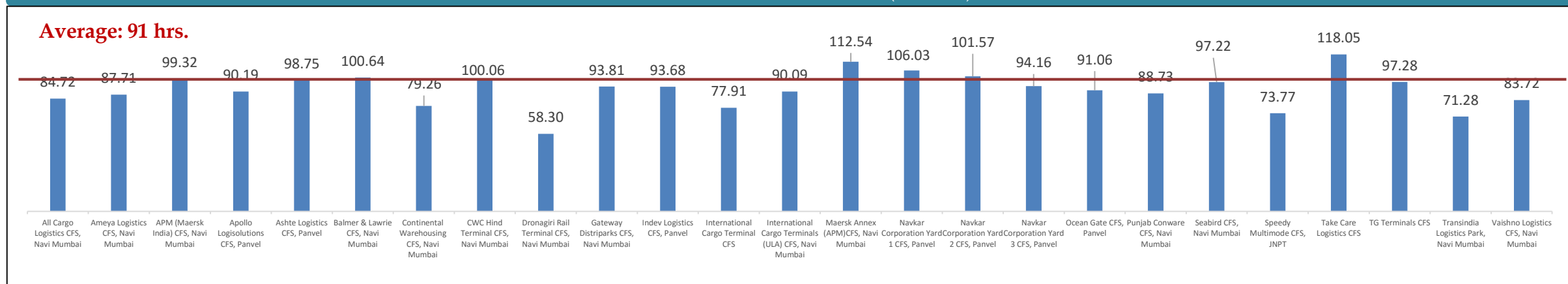
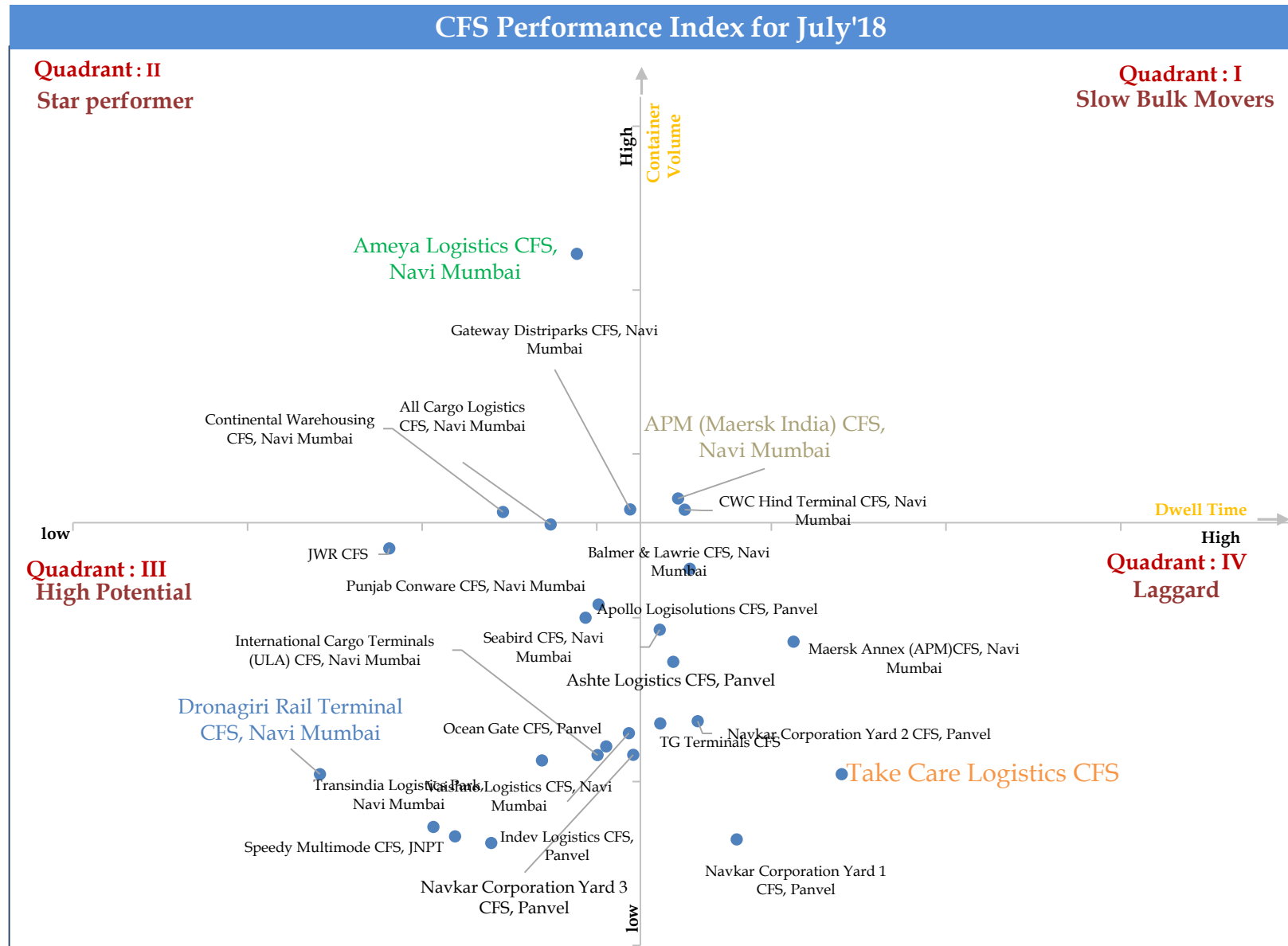| Top Performing CFS		Low Performing ICD	
Dronagiri Rail Terminal CFS, Navi Mumbai	58.30 hrs	Take Care Logistics CFS	118.05 hrs

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JNPT region CFS : Performance Index

The below graph depicts the Performance Index for all CFS for July'18. The Quadrant II represent the best CFS with high frequency Index i.e. high container volume at lower dwell time

CFS Performance Index for July'18

Quadrant : II
Star performer

Quadrant : I
Slow Bulk Movers

High — Container Volume

Ameya Logistics CFS, Navi Mumbai

Gateway Distriparks CFS, Navi Mumbai

All Cargo Logistics CFS, Navi Mumbai

Continental Warehousing CFS, Navi Mumbai

APM (Maersk India) CFS, Navi Mumbai

CWC Hind Terminal CFS, Navi Mumbai

Dwell Time
High

low

Quadrant : III
High Potential

JWR CFS

Balmer & Lawrie CFS, Navi Mumbai

Quadrant : IV
Laggard

Punjab Conware CFS, Navi Mumbai

Apollo Logisolutions CFS, Panvel

International Cargo Terminals (ULA) CFS, Navi Mumbai

Seabird CFS, Navi Mumbai

Maersk Annex (APM)CFS, Navi Mumbai

Ashte Logistics CFS, Panvel

Dronagiri Rail Terminal CFS, Navi Mumbai

Ocean Gate CFS, Panvel

TG Terminals CFS

Navkar Corporation Yard 2 CFS, Panvel

Take Care Logistics CFS

Transindia Logistics Park, Navi Mumbai

Vaishno Logistics CFS, Navi Mumbai

Speedy Multimode CFS, JNPT

Indev Logistics CFS, Panvel

Navkar Corporation Yard 3 CFS, Panvel

Navkar Corporation Yard 1 CFS, Panvel

low

Legends

Top in category

- 🟩 **Star performer**
- 🟫 **Slow bulk mover**
- 🟦 **High potential**
- 🟧 **Laggard**

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ICD DWELL TIME ANALYSIS

The table below depicts the dwell of all ICDs for July'18 and June'18.

ICD Dwell Time (in Hrs)		
ICD	June'18	July'18
ACTL ICD, Faridabad	122.41	128.04
Adani Logistics Park ICD, Gurgaon	109.58	126.48
Albatross Inland Ports ICD, Dadri	128.53	150.57
Allcargo Logistics Park ICD, Dadri	127.14	134.60
APM Terminals ICD, Dadri	121.65	134.66
CMA CGM Agencies ICD, Dadri	132.71	130.78
CWC ICD, Loni	117.96	233.92
CWC ICD, Patparganj	166.04	145.97
Gateway Rail Freight ICD, Gurgaon	127.05	117.54
CONCOR ICD, Aurangabad	197.32	173.92
CONCOR ICD, Dadri	109.87	125.38
CONCOR Kanakpura ICD, Jaipur	164.57	160.34
CONCOR Mulund ICD, Mumbai	124.17	162.62
CONCOR Tughlakabad ICD, New Delhi	116.54	132.64

Top Performing ICD	
Gateway Rail Freight ICD, Gurgaon	117.54 hrs

Low Performing ICD	
CWC ICD, Loni	233.92 hrs

*Based on Dwell time for July'18

ICD – DWELL OVERVIEW (JULY'18)   (IN HRS)

Avg. 137 hrs.

ICD	Value
ACTL ICD, Faridabad	128.04
Adani Logistics Park ICD, Gurgaon	126.48
Albatross Inland Ports ICD, Dadri	150.57
Allcargo Logistics Park ICD, Dadri	134.60
APM Terminals ICD, Dadri	134.67
CMA CGM Agencies ICD, Dadri	130.78
CWC ICD, Loni	233.93
CWC ICD, Patparganj	145.98
Gateway Rail Freight ICD, Gurgaon	117.54
CONCOR ICD, Aurangabad	173.92
CONCOR ICD, Dadri	125.38
CONCOR Kanakpura ICD, Jaipur	160.34
CONCOR Mulund ICD, Mumbai	162.62
CONCOR Tughlakabad ICD, New Delhi	132.64

ICD : Performance Index

The below graph depicts the Performance Index for all ICDs for July'18. The Quadrant II represent the best ICD with high frequency Index i.e. high container volume at lower dwell time

ICD ANALYSIS : Transit Time Analysis

Transit Time Analysis

Below table shows the average delivery time of ICD in import cycle i.e. Port out to ICD in via rail transportation

ICD- AVG DELIVERY TIME PORT OUT TO ICD IN (TRAIN)		
Region	**June'18**	**July'18**
NCR region	2.94 days	3.13 days

Below table shows the average delivery time of ICD in export cycle i.e. ICD out to port in via rail transportation

ICD- AVG DELIVERY TIME ICD OUT TO PORT IN (TRAIN)		
Region	**June'18**	**July'18**
NCR region	2.72 days	3.15 days

LEAD TIME ANALYSIS

Below table shows the average lead time of ICD in import cycle i.e. Port in to ICD out via train. The ICDs in NCR region have low dwell time as compared to Aurangabad region, thus making the lead time for the Aurangabad region higher as compared to NCR region
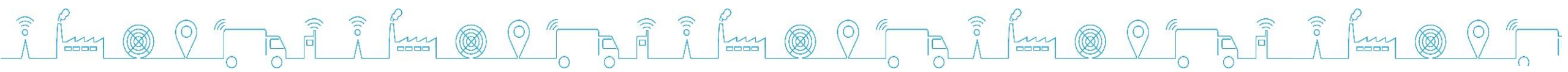
ICD- AVG LEAD TIME (TRAIN)		
Region	**June'18**	**July'18**
NCR region	10.11 days	10.39 days

Calculation :

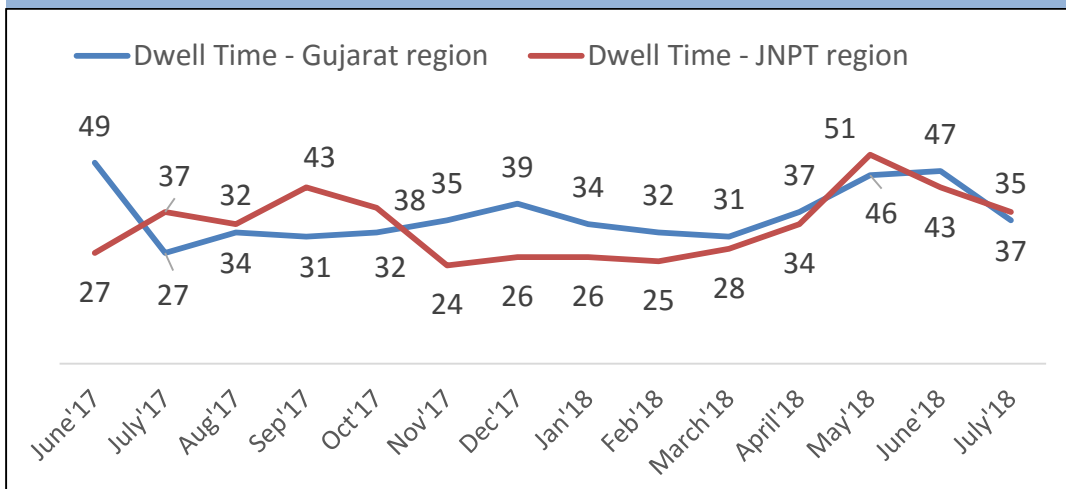Port Dwell Time + Port to ICD Delivery Time + ICD Dwell Time = Avg. Lead Time from Port to ICD
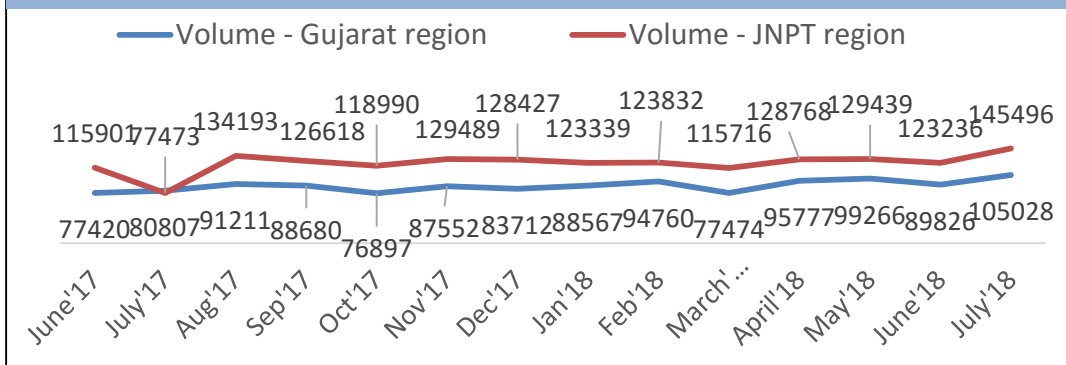
Trend Analysis

Western Corridor Port – Yearly Analysis

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Container Volume and Dwell time of all the terminals in JNPT and Gujarat Port has been analysed until July'18

Import Cycle

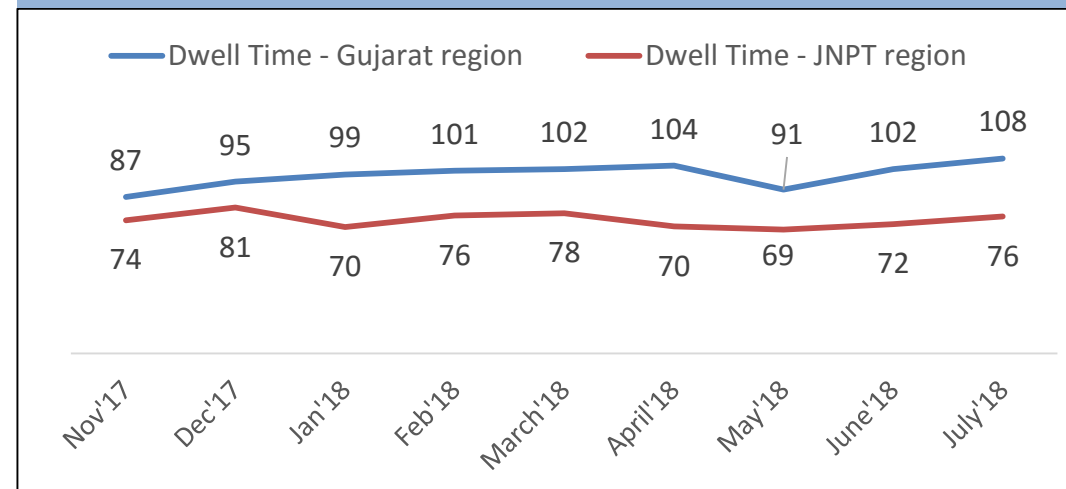### Dwell Time – Gujarat Region Vs JNPT Region

— Dwell Time - Gujarat region — Dwell Time - JNPT region

49, 37, 32, 43, 35, 38, 39, 34, 32, 31, 37, 51, 47, 35
27, 27, 34, 31, 32, 24, 26, 26, 25, 28, 34, 46, 43, 37

June'17, July'17, Aug'17, Sep'17, Oct'17, Nov'17, Dec'17, Jan'18, Feb'18, March'18, April'18, May'18, June'18, July'18

Volume – Gujarat Region Vs JNPT Region

— Volume - Gujarat region — Volume - JNPT region

115901, 77473, 134193, 126618, 118990, 129489, 128427, 123339, 123832, 115716, 128768, 129439, 123236, 145496
77420, 80807, 91211, 88680, 76897, 87552, 83712, 88560, 94760, 77474, 95777, 99266, 89826, 105028

June'17, July'17, Aug'17, Sep'17, Oct'17, Nov'17, Dec'17, Jan'18, Feb'18, March'18, April'18, May'18, June'18, July'18
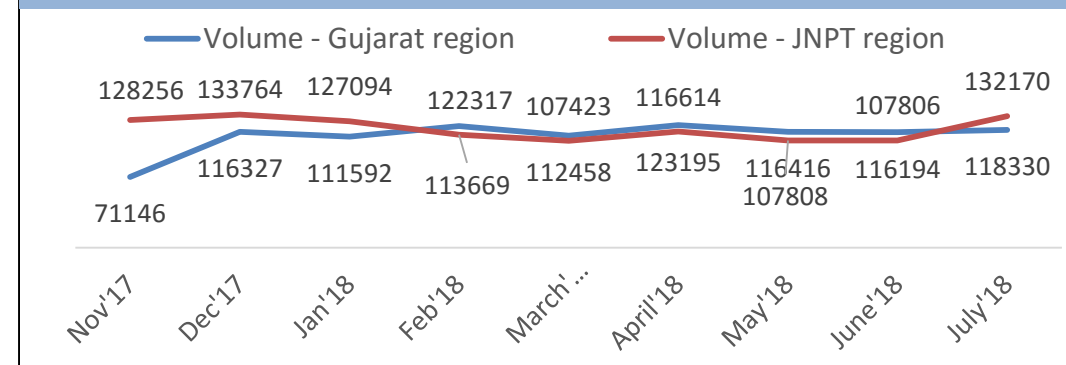
In Import cycle, Gujarat Port has catered **28% less container volume** as compared to the JNPT yet their(Gujarat port) **Dwell Time** is **higher** by **7%** than JNPT
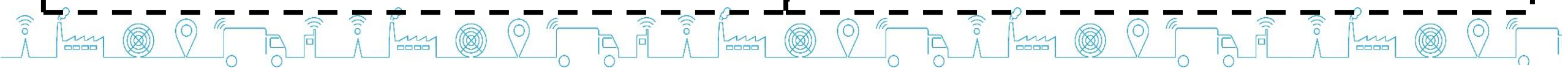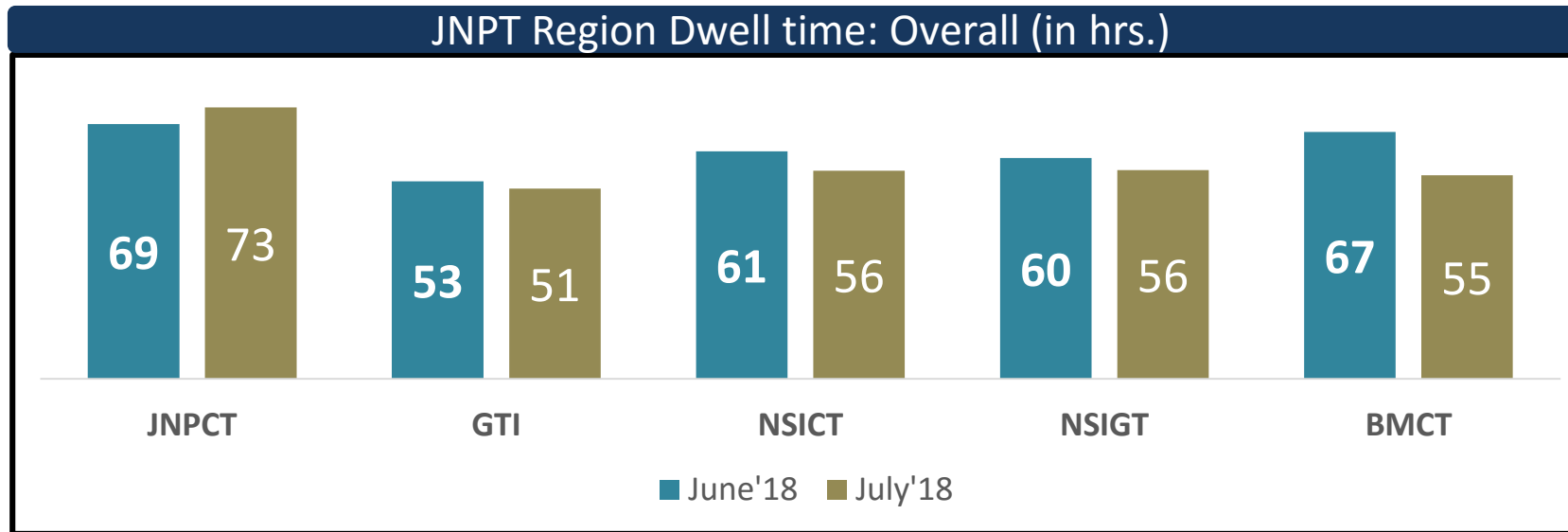
Export Cycle

Dwell Time – Gujarat Region Vs JNPT Region

— Dwell Time - Gujarat region — Dwell Time - JNPT region

87, 95, 99, 101, 102, 104, 91, 102, 108
74, 81, 70, 76, 78, 70, 69, 72, 76

Nov'17, Dec'17, Jan'18, Feb'18, March'18, April'18, May'18, June'18, July'18

Volume – Gujarat Region Vs JNPT Region

— Volume - Gujarat region — Volume - JNPT region

128256, 133764, 127094, 122317, 107423, 116614, 107808, 107806, 132170
71146, 116327, 111592, 113669, 112458, 123195, 116416, 116194, 118330

Nov'17, Dec'17, Jan'18, Feb'18, March'18, April'18, May'18, June'18, July'18

In Export cycle, Gujarat Port has catered **6% less container volume** as compared to the JNPT yet their(Gujarat port) **Dwell Time** is **higher** by **34%** than JNPT

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JNPT port dwell time trend :

The below table shows the overall port dwell time (i.e. import and export cycle combine) trend(Month of Month) of all the JNPT Port terminals. Port dwell time is the time duration between the entry of the container in Port terminal to the time it moves out of the Port terminal
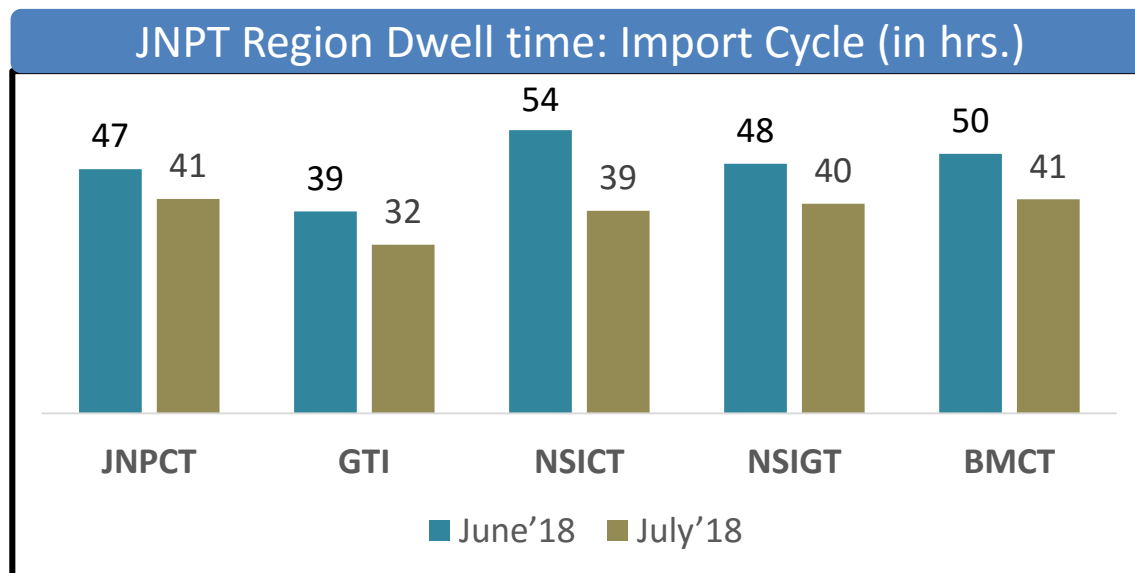
JNPT Region Dwell time: Overall (in hrs.)

Terminal	June'18	July'18
JNPCT	69	73
GTI	53	51
NSICT	61	56
NSIGT	60	56
BMCT	67	55

The overall JNPT region average dwell time for July'18 is 57hrs as compared to 60hrs in June'18

The below tables showcase the Import and Export cycle dwell time for both rail and truck bound containers for month of July'18
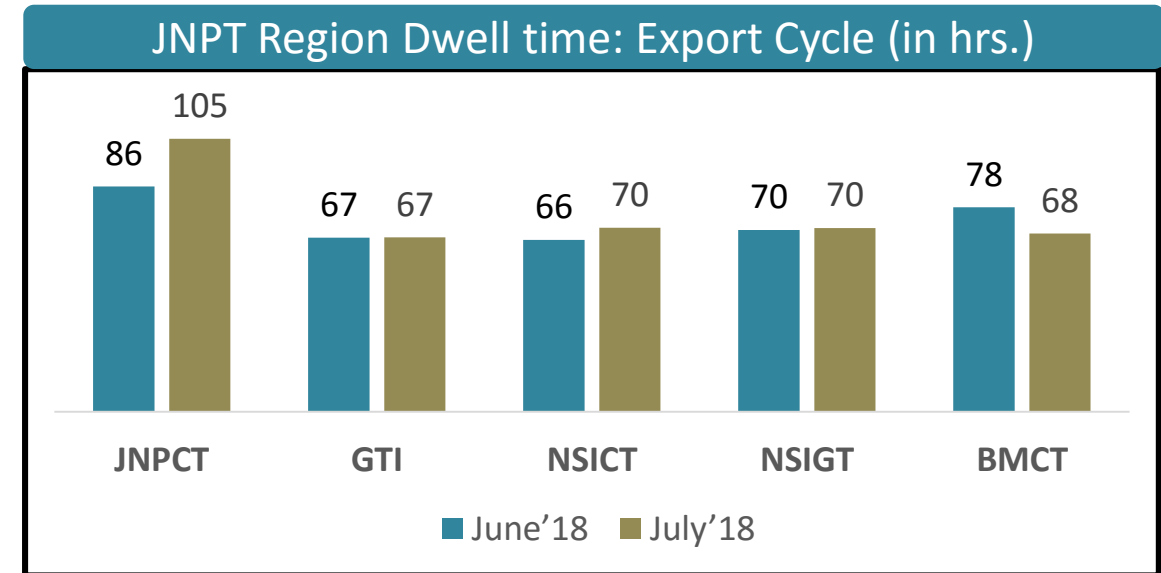
JNPT Import cycle Trend

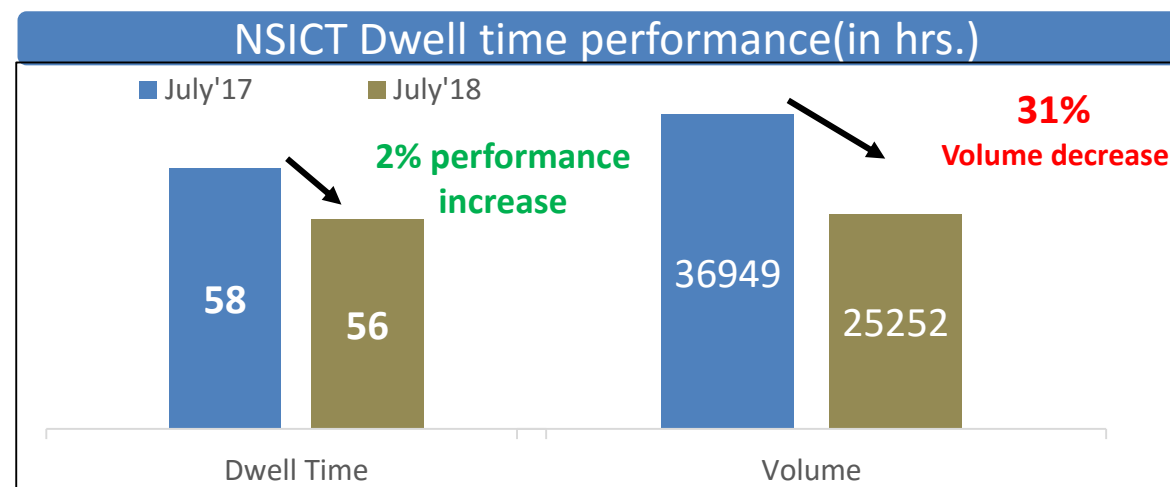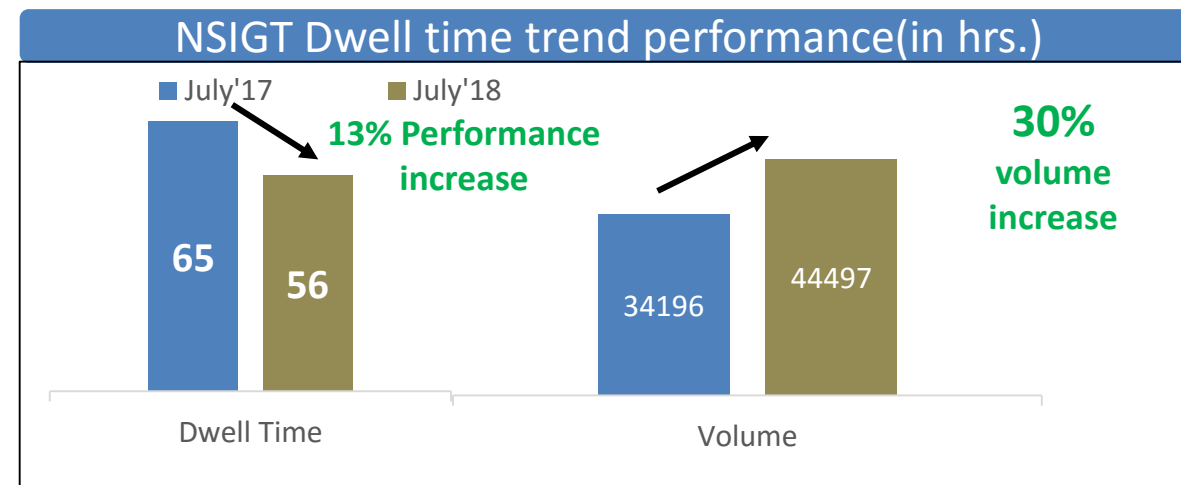The average import cycle dwell time of JNPT region port terminals for July'18 is **37hrs.**

JNPT Region Dwell time: Import Cycle (in hrs.)

Terminal	June'18	July'18
JNPCT	47	41
GTI	39	32
NSICT	54	39
NSIGT	48	40
BMCT	50	41

JNPT Export cycle Trend

The average export cycle dwell time of JNPT region port terminals for July'18 is **76hrs.**

JNPT Region Dwell time: Export Cycle (in hrs.)

Terminal	June'18	July'18
JNPCT	86	105
GTI	67	67
NSICT	66	70
NSIGT	70	70
BMCT	78	68

JNPT Port terminals performance(Year-on-Year)

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The below graphs display the Year-on-Year overall dwell time performance and volume across the JNPT Port terminals

JNPCT Dwell time performance(in hrs.)

■ July'17   ■ July'18

28%
Performance decrease

20%
Volume increase

57 | 73

70509 | 85013

Dwell Time | Volume

NSIGT Dwell time trend performance(in hrs.)

■ July'17   ■ July'18

13% Performance increase

30% volume increase

65 | 56

34196 | 44497

Dwell Time | Volume

NSICT Dwell time performance(in hrs.)

■ July'17   ■ July'18

2% performance increase

31% Volume decrease

58 | 56

36949 | 25252

Dwell Time | Volume

Analysis: On comparing the Dwell time and Volume catered by the individual terminals in July'17 and July'18,
- NSIGT has reduced its dwell time by 13%, catered 30% more volume

Note: GIT is been removed for Year on Year analysis, as in 2017 no data was published for the same as it was hit by ransomware

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For the 4 terminals of JNPT i.e. JNPCT, GTI, NSIGT & NSICT prediction analysis has been done on Dwell Time

Dwell time dependence on terminal volume has been evaluated i.e. intercept coefficient, this helped in predicting the dwell time of the terminal based on the forecasted volume for July'18

Logic for predicting Dwell Time = Intercept Coefficient + (x variable * forecasted volume)

Terminal	Intercept Coefficient
JNPCT	80.23
GTI	40.61
NSIGT	60.27
NISCT	49.03

Note: The prediction has been done with the error rate of 8%

JNPT Port terminals Dwell time Trend and Forecast

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The below graphs display the dwell time and volume trend across the year of JNPT Port terminals from April'17 to July'18. The highlighted data points are the projections for next month
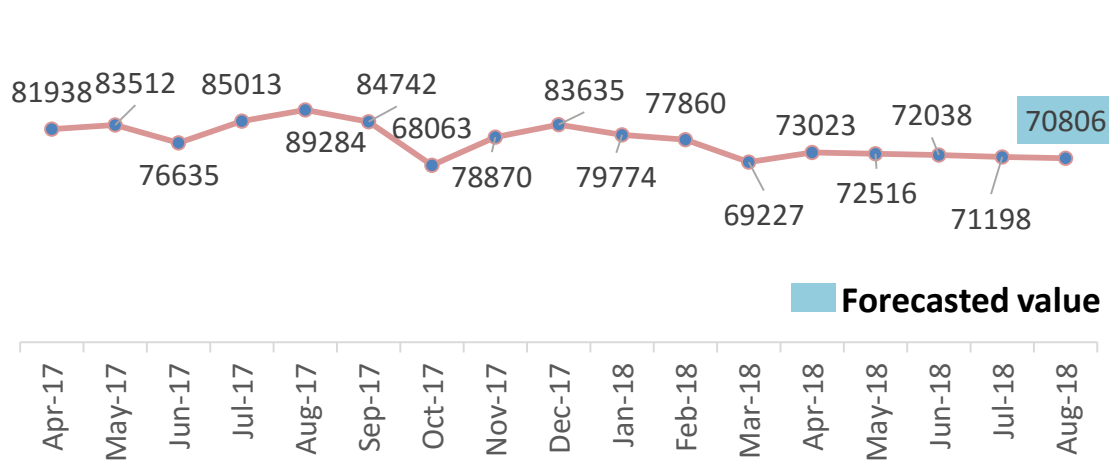
CAGR – Compound Annual Growth Rate

JNPCT

Dwell Time Trend and prediction (in hrs.)

Data points: 61, 52, 54, 57, 59, 61, 60, 52, 66, 47, 56, 63, 57, 72, 69, 58, 61 (Prediction value)

Prediction value

Dwell Time CAGR: -0.34%

JNPCT	July'18	Predicted Values	Error rate
Dwell time	58	57.54	0.003%

Container Volume Trend and forecast

Data points: 81938, 83512, 76635, 85013, 89284, 84742, 68063, 78870, 83635, 79774, 77860, 69227, 73023, 72516, 72038, 71198, 70806 (Forecasted value)

Forecasted value

CAGR: -0.93%

GTI

GTI Dwell time trend and prediction (in hrs.)

Data points: 42, 42, 46, 66, 61, 68, 56, 40, 45, 46, 41, 42, 45, 45, 48, 47, 47 (Prediction value)

Prediction value
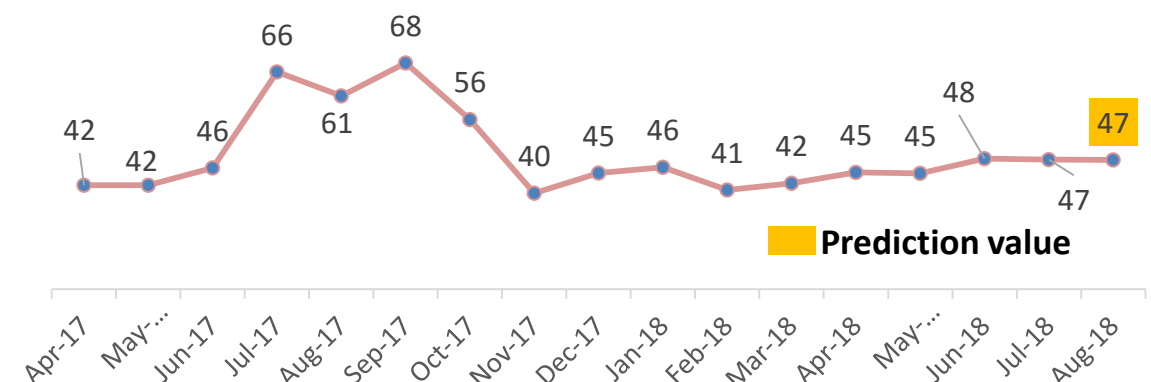
Dwell Time CAGR: 0.7%

GTI	July'18	Predicted Values	Error rate
Dwell time	47	47.61	0.003%

GTI Container volume trend and forecast

Data points: 107960, 109322, 104678, 105797, 118668, 90049, 94867, 112757, 109172, 96460, 89277, 76743, 92040, 87457, 84809, 82980, 82127 (Forecasted value)

Forecasted value
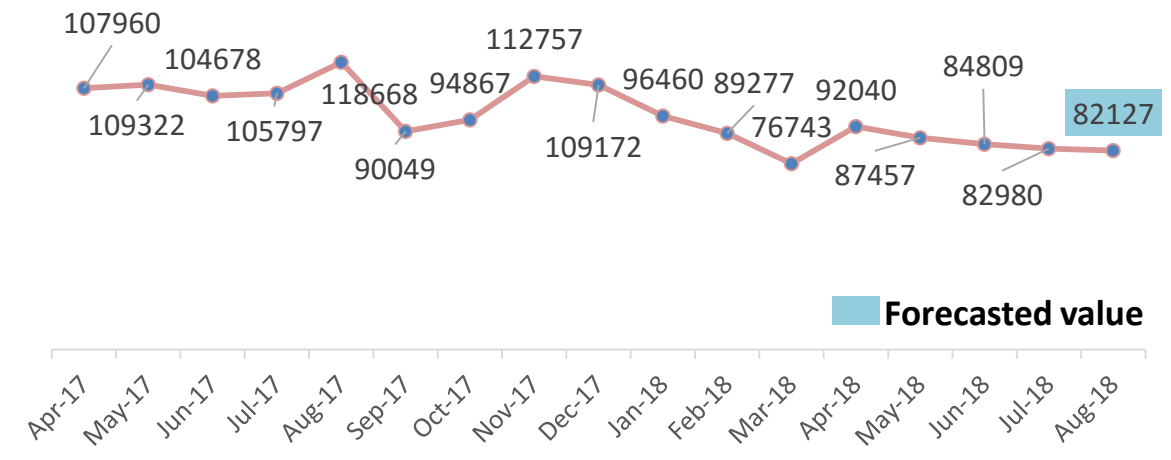
CAGR: -1.74%

JNPT Port terminals Dwell time Trend and Forecast

The below graphs display the dwell time and volume trend across the year of JNPT Port terminals from April'17 to July'18. The highlighted data points are the projections for next month

CAGR – Compound Annual Growth Rate

NSICT

Dwell Time Trend and prediction (hrs.)

Dwell Time CAGR: -0.74%
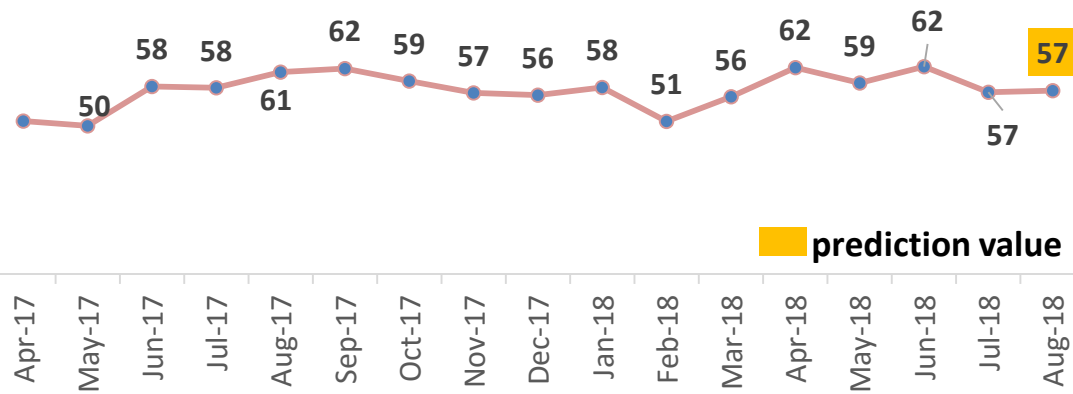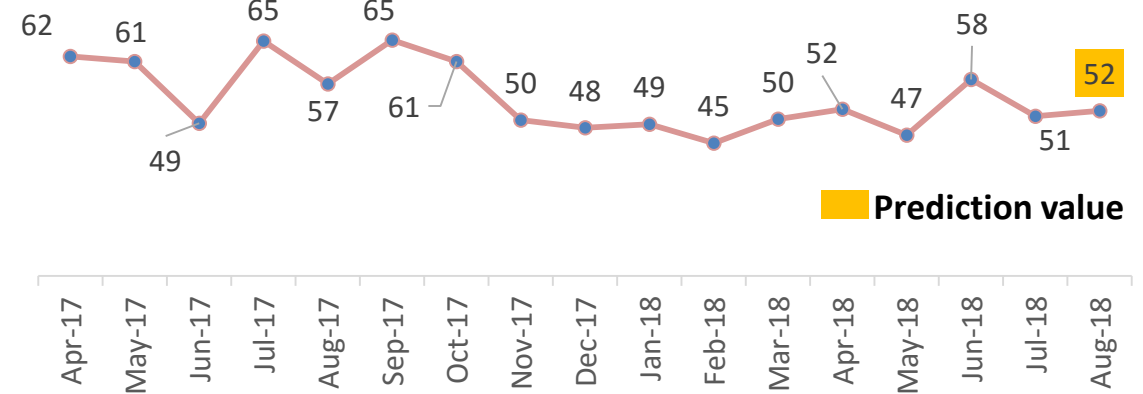
NSICT	July'18	Predicted Values	Error rate
Dwell time	57	56.80	0.008%

Container Volume Trend and forecast

CAGR: - 0.36%

NSIGT

Dwell Time Trend and prediction(in hrs.)

Dwell Time CAGR: -1.29%

NSIGT	July'18	Predicted Values	Error rate
Dwell time	51	50.55	0.003%

Container Volume Trend and forecast
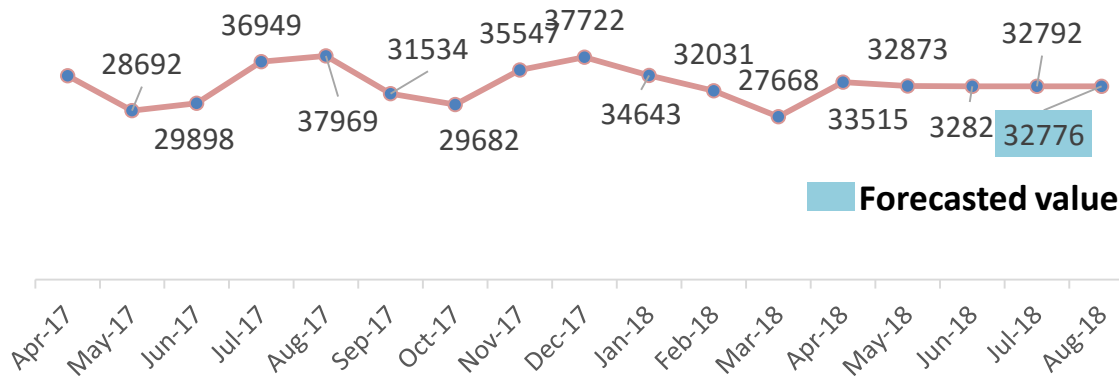
CAGR: 4.86%

SECTION III: ANNEXURE

JNPT
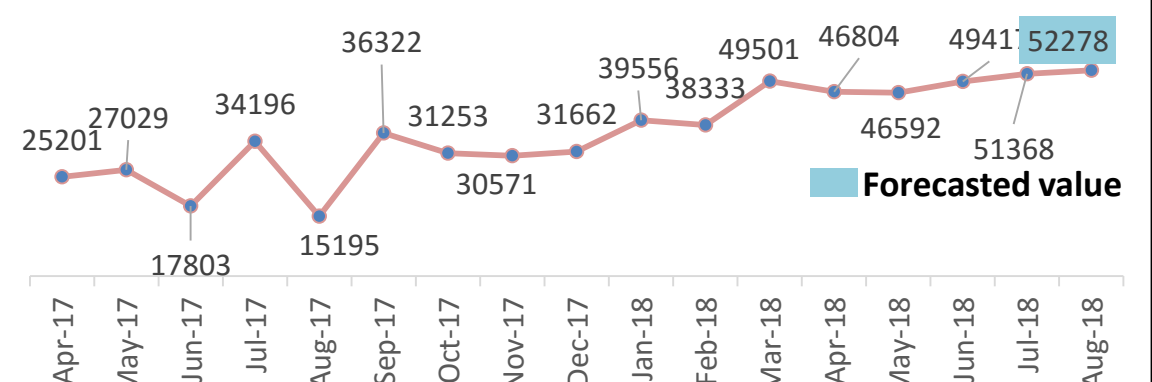
CO 2 Emission : Calculations

- **Carbon emission has been calculated for N3 tractor trailer (most commonly used in India) along with the support of white paper published by INTERNATIONAL COUNCIL ON CLEAN TRANSPORTATION and ECTA**
- **Fuel consumption per litre depicts the figure the truck will consumes while its ignition is turn on (truck in motion + truck waiting in queue with engine turned on)**
- **Please find the calculations in below excel sheet**

Vehicle	Gross vehicle weight (tonnes)	Axle cong	Speed	Fuel consuptio upper limit (l/100km)
N3 Tractor Trailers	40.2-49.0	6x2	40 km/hr	37.4
	40.2-49.0	6x4		43

Average fuel consumption (l/100km)
40

CFS

Import Cycle		
Average distance covered by truck around JNPT	Feb'17	Dec'17
19	3.84	2.4
Fuel consumed	61.44	38.4

Average distance covered by truck around J
19
Fuel consumed

Carbon Emission in Import cycle			
Formula	For Dieseal (Kg CO2/ltr)	Feb'17	Dec'17	Improvement
Carbon Emission	2.9	178.176	111.36	38%

Formula
Carbon Emission = fuel consumed * Fu

Toll Plaza

Toll Plaza			
Toll plazas	erage distance covered btw toll pla	July'17	Nov'17
Khaniwade to Charoti	50	1.6	1.3
	Fuel consumed	25.6	20.8
JNPT to Khaniwade	94	7.2	6.6
	Fuel consumed	115.2	105.6
Kishangarh to Daulatpura	128	3.6	3.2
	Fuel consumed	57.6	51.2
Bharthan to Vasad	60	1.7	1.6
	Fuel consumed	27.2	25.6

Formula
Carbon Emission = fuel consumed * Fu
Khaniwade to Charoti
JNPT to Khaniwade
Kishangarh to Daulatpura
Bharthan to Vasad

Source
INTERNATIONAL COUNCIL ON CLEAN TRANSPORTATION   https://www.ecta.com/resources/Documents/Best%20Practices%20Guidelines/guideline_for_measuring_and_managing_co2.pdf
ECTA   https://www.theicct.org/sites/default/files/publications/ICCT_India-HDV-fuel-consumption_policy-update_20171207.pdf
NECTI analysis

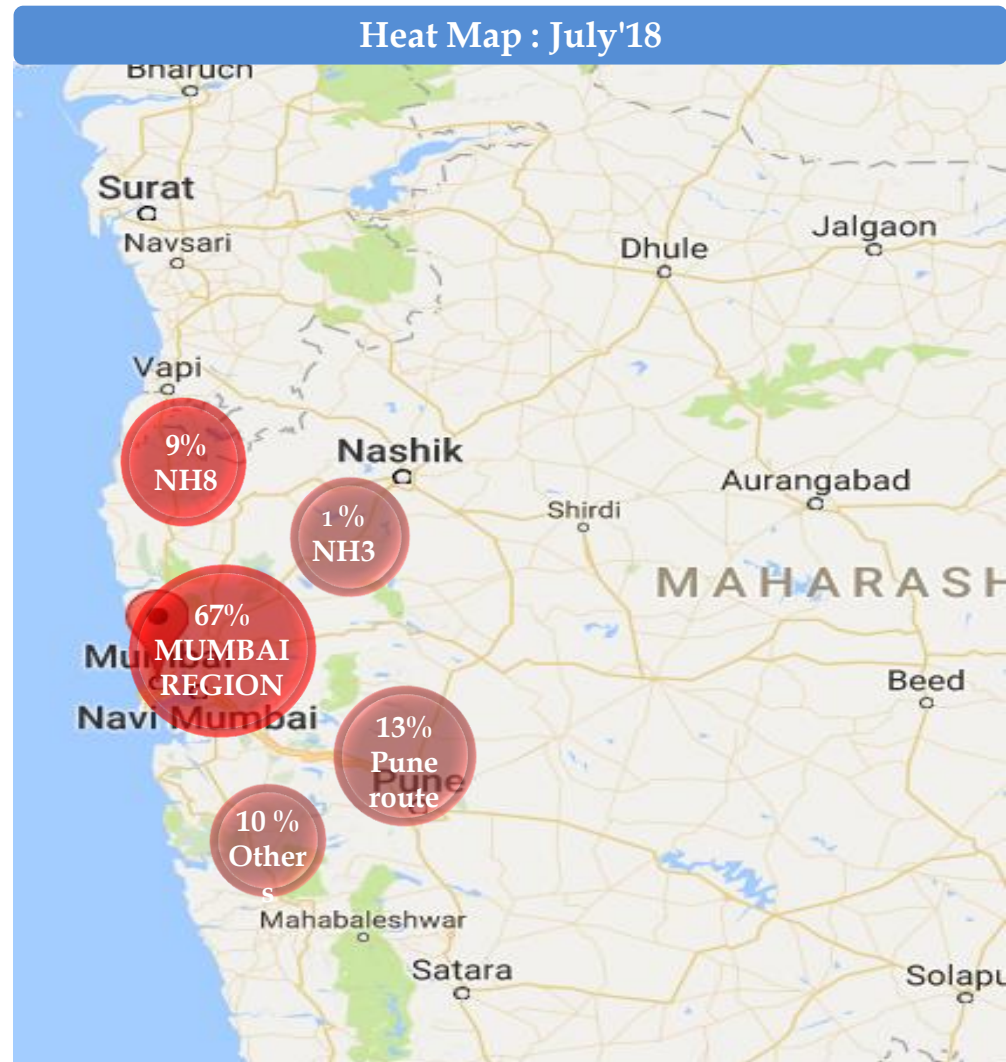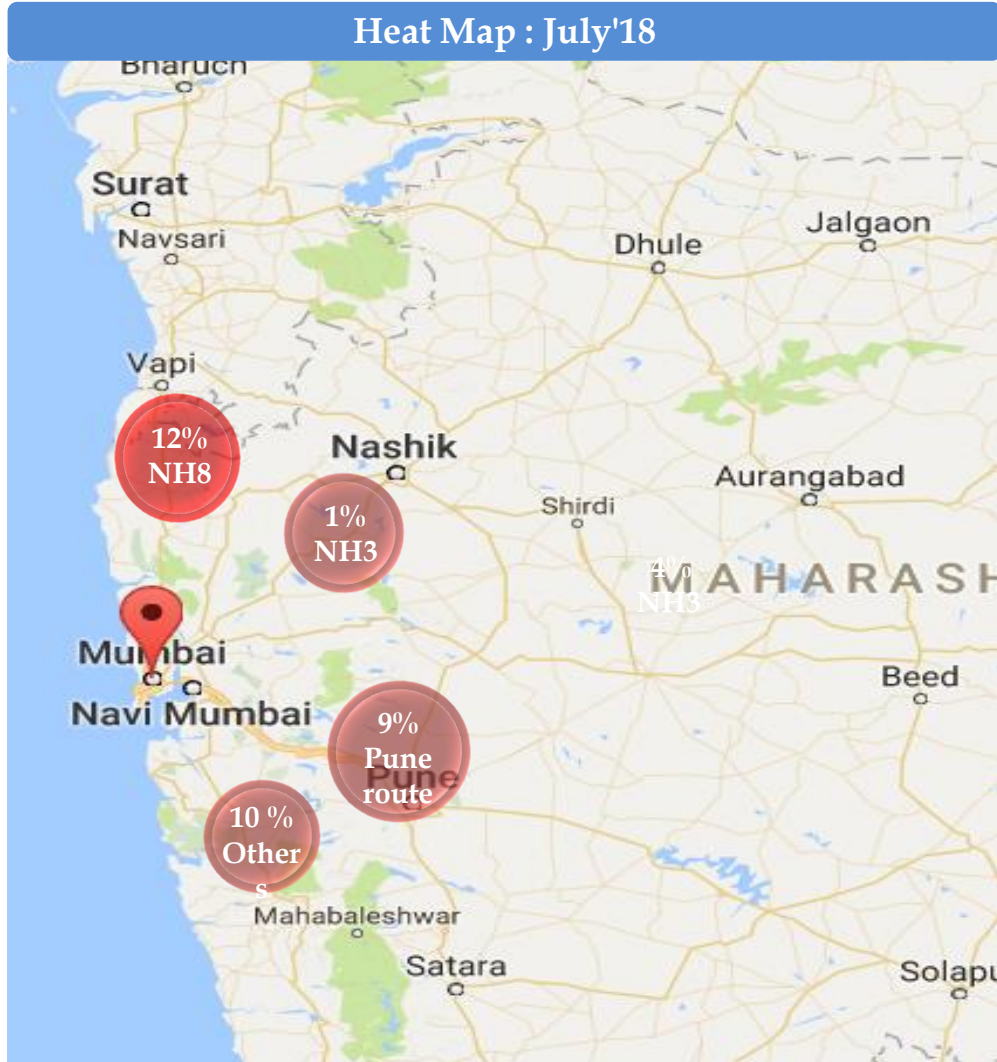- **Please find toll plaza details below**

Toll plaza	Name	Toll plaza	Name
T1	**Khaniwade**	T3	**Kishangarh**
T2	**Charoti**	T4	**Daulatpura**
		T5	**Bharthan**
		T6	**Vasad**

HEAT MAP : JNPCT Port Terminal

Heat Map : July'18

12%
NH8

1%
NH3

NH3

9%
Pune route

10 %
Others

Region	June'18	July'18
Mumbai region	51%	67%
NH3	2%	1%
Pune	14%	9%
NH8	23%	12%
others	10%	10%

The heat map above depicts the movement of containers in and around the Mumbai region.

HEAT MAP : GTI Port Terminal

Heat Map : July'18

9%
NH8

1%
NH3

67%
MUMBAI REGION

13%
Pune route

10 %
Others

Region	June'18	July'18
Mumbai region	60%	67%
NH3	2%	1%
Pune	13%	13%
NH8	15%	9%
others	10%	10%

The heat map above depicts the movement of containers in and around the Mumbai region.

DLDS
Logistics Redefined
DMICDC LOGISTICS DATA SERVICES LTD

HEAT MAP : NSIGT Port Terminal

Heat Map : July'18

Region	June'18	July'18
Mumbai region	41%	53%
NH3	3%	3%
Pune	24%	20%
NH8	22%	14%
others	10%	10%

The heat map above depicts the movement of containers in and around the Mumbai region.
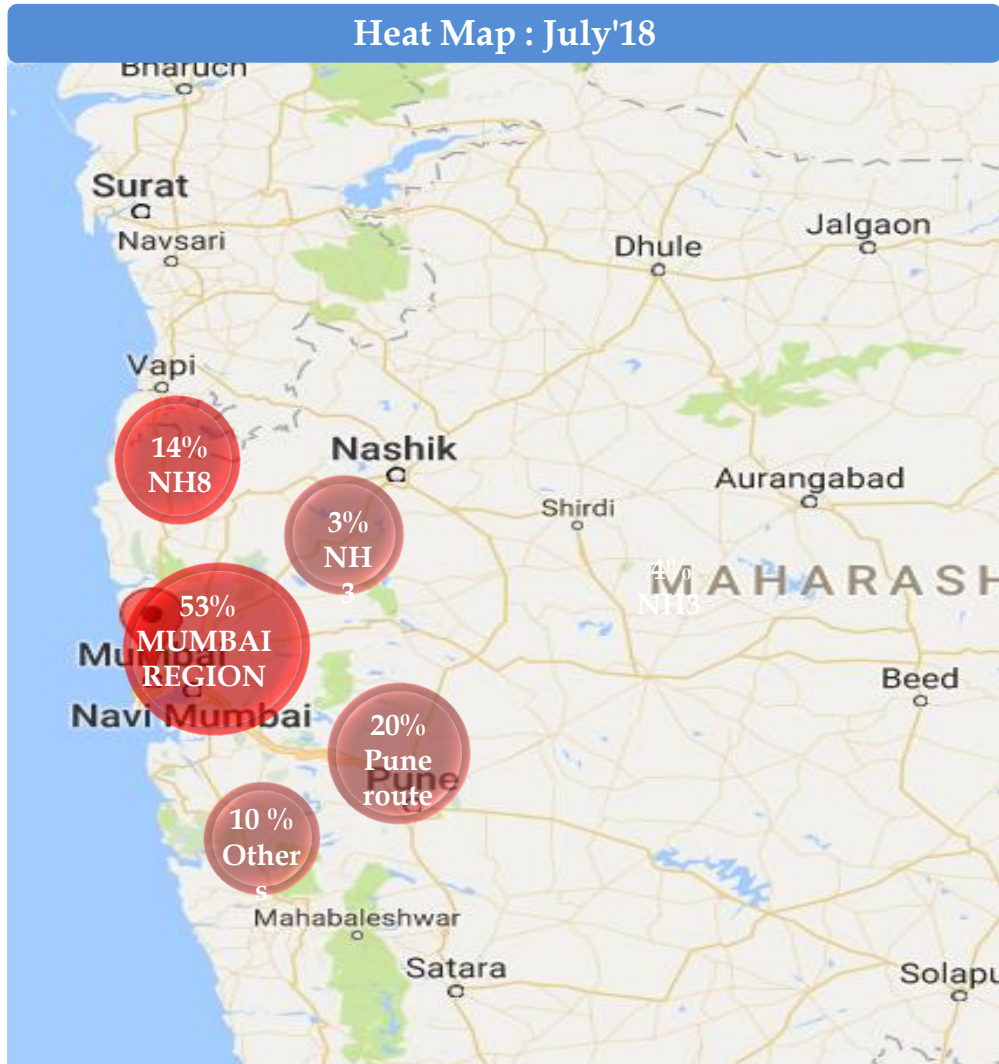
HEAT MAP : NSICT Port Terminal

Heat Map : July'18

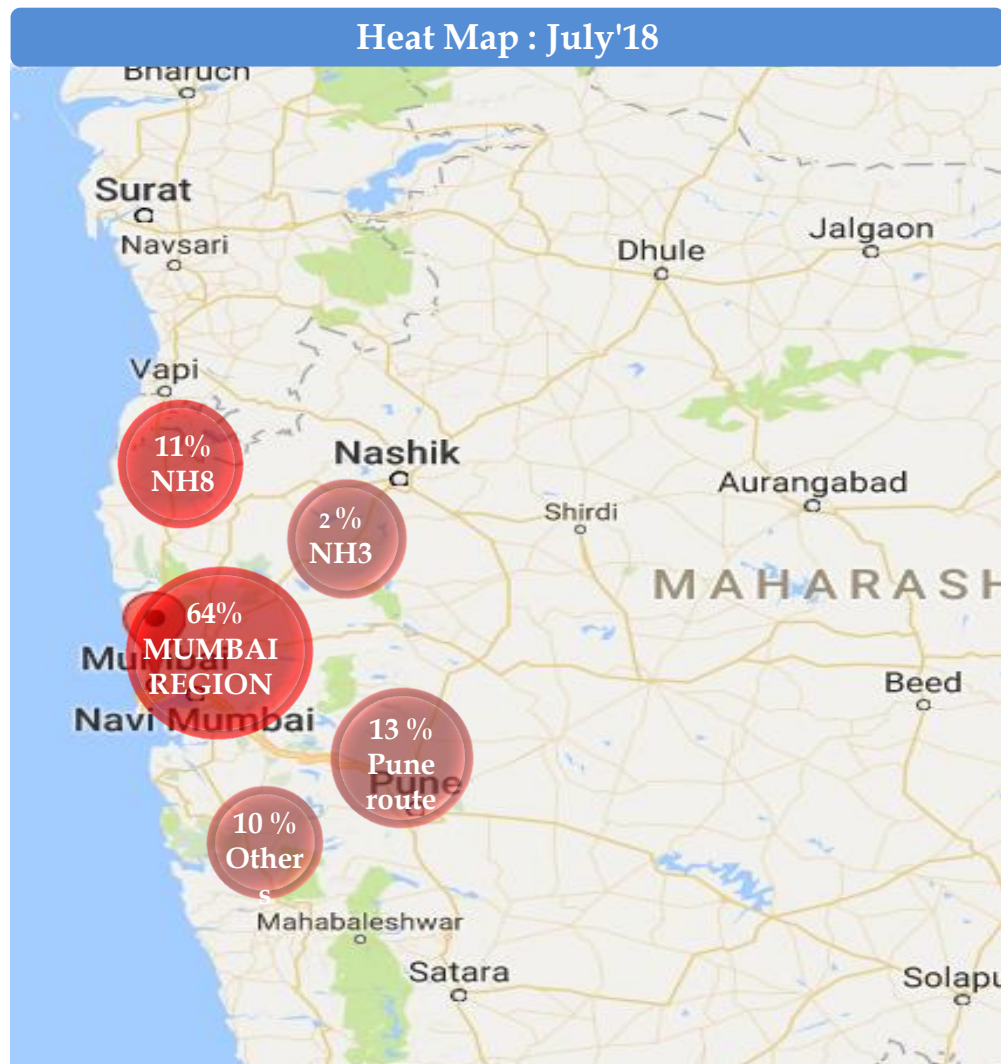| Region	June'18	July'18
Mumbai region	36%	64%
NH3	5%	2%
Pune	22%	13%
NH8	26%	11%
others	10%	10%

The heat map above depicts the movement of containers in and around the Mumbai region.

HEAT MAP : BMCT Port Terminal
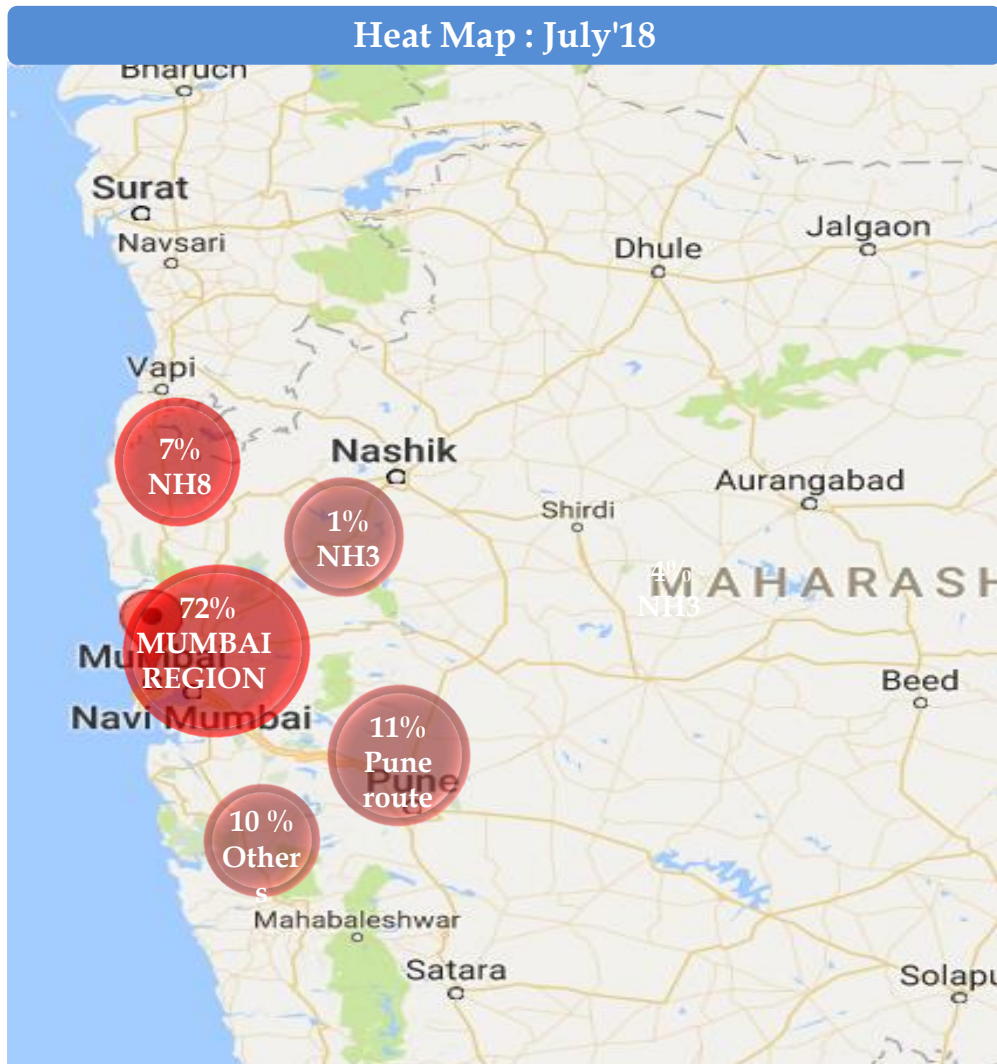
Heat Map : July'18

Region	June'18	July'18
Mumbai region	51%	72%
NH3	2%	1%
Pune	21%	11%
NH8	16%	7%
others	10%	10%

The heat map above depicts the movement of containers in and around the Mumbai region.

Below table shows the delivery time in export cycle from the CFS's to PORT terminals

For July'18				
CFS Out Port in (Export Cycle in Hrs)				
CFS	**JNPCT**	**GTI**	**NSICT**	**NSIGT**
Jawaharlal Nehru Port CFS (Speedy Multimode Ltd CFS)	1.6	1.8	1.8	3.3
Balmer & Lawrie & Co. Ltd.,CFS	2.1	2.3	1.9	2.2
Gateway Distriparks Ltd	2.9	2.6	2.8	3.1
APM (Maersk India Pvt. Ltd)CFS	2.4	2.3	1.8	1.8
Continental Warehousing (Nhava Sheva) Ltd.	1.9	1.9	1.6	1.6
Seabird Marine Services Pvt Ltd.	2.0	1.9	1.7	1.6
JWC Logistics Park Ltd CFS	4.4	3.5	3.0	3.0
Ameya Logistics Pvt. Ltd.	3.3	3.0	2.8	2.9
Ashte Logistics Pvt. Ltd.	3.9	4.3	4.8	4.9
NAVAKAR CORPORATION LTD.,YARD-1 CFS	4.6	3.5	6.1	5.5
Apollo Logisolutions Ltd.	7.4	6.0	4.7	6.4
Ocean Gate Container Terminals Pvt. Ltd.CFS	3.7	3.5	4.0	3.8
Indev Logistics Pvt. Ltd.CFS	5.4	4.9	6.5	6.3
Transindia Logistics Park Pvt, Ltd CFS	3.3	2.3	2.6	2.7
All Cargo Logistics Ltd., CFS	2.4	2.0	2.2	2.2
Vaishno Logistics Yard CFS	1.6	3.3		2.3
NAVKAR CORPORATION LTD.,YARD-II CFS	4.3	5.0	3.4	4.3
PUNJAB CONWARE (PW)	2.5	2.3	2.4	2.1
DRONAGIRI RAIL TERMINAL	2.1	2.1	1.9	3.1
MAHARASHTRA STATE WARE. CORP. CFS	3.1	2.6		1.7
CWC LOGISTIC PARK - Opr.Hind Trmnl.	2.5	2.0	2.0	2.0
NAVKAR CORPORATION LTD.YARD-III CFS	4.5	4.7	3.8	4.1
International Cargo Terminals & Infrastructure Private Limited-CFS	2.5	3.2	2.6	2.4
Maersk Annex (APM)CFS	2.8	4.4	2.9	3.3
International Cargo Terminal CFS	2.6	2.5	2.6	2.7
SBW Logistics CFS , Navi Mumbai	5.5	6.2	12.3	5.8

CFS - AVERAGE DELIVERY TIME - GTI TO ALL CFS's IN MUMBAI

Below table shows the average delivery time in import cycle from GTI to all the CFS's

AVERAGE DELIVERY TIME (In Hrs)- GTI TO ALL CFS IN MUMBAI	
CFS	July'18 (in hrs)
Jawaharlal Nehru Port CFS (Speedy Multimode Ltd CFS)	1.8
Balmer & Lawrie & Co. Ltd.,CFS	2.3
Gateway Distriparks Ltd	2.6
APM (Maersk India Pvt. Ltd)CFS	2.3
Continental Warehousing (Nhava Sheva) Ltd.	1.9
Seabird Marine Services Pvt Ltd.	1.9
JWC Logistics Park Ltd CFS	3.5
Ameya Logistics Pvt. Ltd.	3.0
Ashte Logistics Pvt. Ltd.	4.3
NAVAKAR CORPORATION LTD.,YARD-1 CFS	3.5
Apollo Logisolutions Ltd.	6.0
Ocean Gate Container Terminals Pvt. Ltd.CFS	3.5
Indev Logistics Pvt. Ltd.CFS	4.9
Transindia Logistics Park Pvt, Ltd CFS	2.3
All Cargo Logistics Ltd., CFS	2.0
Vaishno Logistics Yard CFS	3.3
NAVKAR CORPORATION LTD.,YARD-II CFS	5.0
PUNJAB CONWARE (PW)	2.3
DRONAGIRI RAIL TERMINAL	2.1
MAHARASHTRA STATE WARE. CORP. CFS	2.6
CWC LOGISTIC PARK - Opr.Hind Trmnl.	2.0
NAVKAR CORPORATION LTD.YARD-III CFS	4.7
International Cargo Terminals & Infrastructure Private Limited-CFS	3.2
Maersk Annex (APM)CFS	4.4
International Cargo Terminal CFS	2.5
SBW Logistics CFS , Navi Mumbai	6.2

CFS - AVERAGE DELIVERY TIME - JNPCT TO ALL CFS's IN MUMBAI

Below table shows the average delivery time in import cycle from JNPCT to all the CFS's

AVERAGE DELIVERY TIME (In Hrs)- JNPCT TO ALL CFS IN MUMBAI	
CFS	July'18 (in hrs)
Jawaharlal Nehru Port CFS (Speedy Multimode Ltd CFS)	1.6
Balmer & Lawrie & Co. Ltd.,CFS	2.1
Gateway Distriparks Ltd	2.9
APM (Maersk India Pvt. Ltd)CFS	2.4
Continental Warehousing (Nhava Sheva) Ltd.	1.9
Seabird Marine Services Pvt Ltd.	2.0
JWC Logistics Park Ltd CFS	4.4
Ameya Logistics Pvt. Ltd.	3.3
Ashte Logistics Pvt. Ltd.	3.9
NAVAKAR CORPORATION LTD.,YARD-1 CFS	4.6
Apollo Logisolutions Ltd.	7.4
Ocean Gate Container Terminals Pvt. Ltd.CFS	3.7
Indev Logistics Pvt. Ltd.CFS	5.4
Transindia Logistics Park Pvt, Ltd CFS	3.3
All Cargo Logistics Ltd., CFS	2.4
Vaishno Logistics Yard CFS	1.6
NAVKAR CORPORATION LTD.,YARD-II CFS	4.3
PUNJAB CONWARE (PW)	2.5
DRONAGIRI RAIL TERMINAL	2.1
MAHARASHTRA STATE WARE. CORP. CFS	3.1
CWC LOGISTIC PARK - Opr.Hind Trmnl.	2.5
NAVKAR CORPORATION LTD.YARD-III CFS	4.5
International Cargo Terminals & Infrastructure Private Limited-CFS	2.5
Maersk Annex (APM)CFS	2.8
International Cargo Terminal CFS	2.6
SBW Logistics CFS , Navi Mumbai	5.5

CFS - AVERAGE DELIVERY TIME - NSICT TO ALL CFS's IN MUMBAI

Below table shows the average delivery time in import cycle from NSICT to all the CFS's

AVERAGE DELIVERY TIME (In Hrs)- NSICT TO ALL CFS IN MUMBAI	
CFS	July'18 (in hrs)
Jawaharlal Nehru Port CFS (Speedy Multimode Ltd CFS)	1.8
Balmer & Lawrie & Co. Ltd.,CFS	1.9
Gateway Distriparks Ltd	2.8
APM (Maersk India Pvt. Ltd)CFS	1.8
Continental Warehousing (Nhava Sheva) Ltd.	1.6
Seabird Marine Services Pvt Ltd.	1.7
JWC Logistics Park Ltd CFS	3.0
Ameya Logistics Pvt. Ltd.	2.8
Ashte Logistics Pvt. Ltd.	4.8
NAVAKAR CORPORATION LTD.,YARD-1 CFS	6.1
Apollo Logisolutions Ltd.	4.7
Ocean Gate Container Terminals Pvt. Ltd.CFS	4.0
Indev Logistics Pvt. Ltd.CFS	6.5
Transindia Logistics Park Pvt, Ltd CFS	2.6
All Cargo Logistics Ltd., CFS	2.2
Vaishno Logistics Yard CFS	
NAVKAR CORPORATION LTD.,YARD-II CFS	3.4
PUNJAB CONWARE (PW)	2.4
DRONAGIRI RAIL TERMINAL	1.9
MAHARASHTRA STATE WARE. CORP. CFS	
CWC LOGISTIC PARK - Opr.Hind Trmnl.	2.0
NAVKAR CORPORATION LTD.YARD-III CFS	3.8
International Cargo Terminals & Infrastructure Private Limited-CFS	2.6
Maersk Annex (APM)CFS	2.9
International Cargo Terminal CFS	2.6
SBW Logistics CFS , Navi Mumbai	12.3

CFS - AVERAGE DELIVERY TIME - NSIGT TO ALL CFS's IN MUMBAI

Below table shows the average delivery time in import cycle from NSIGT to all the CFS's

AVERAGE DELIVERY TIME (In Hrs)- NSIGT TO ALL CFS IN MUMBAI	
CFS	July'18 (in hrs)
Jawaharlal Nehru Port CFS (Speedy Multimode Ltd CFS)	3.3
Balmer & Lawrie & Co. Ltd.,CFS	2.2
Gateway Distriparks Ltd	3.1
APM (Maersk India Pvt. Ltd)CFS	1.8
Continental Warehousing (Nhava Sheva) Ltd.	1.6
Seabird Marine Services Pvt Ltd.	1.6
JWC Logistics Park Ltd CFS	3.0
Ameya Logistics Pvt. Ltd.	2.9
Ashte Logistics Pvt. Ltd.	4.9
NAVAKAR CORPORATION LTD.,YARD-1 CFS	5.5
Apollo Logisolutions Ltd.	6.4
Ocean Gate Container Terminals Pvt. Ltd.CFS	3.8
Indev Logistics Pvt. Ltd.CFS	6.3
Transindia Logistics Park Pvt, Ltd CFS	2.7
All Cargo Logistics Ltd., CFS	2.2
Vaishno Logistics Yard CFS	2.3
NAVKAR CORPORATION LTD.,YARD-II CFS	4.3
PUNJAB CONWARE (PW)	2.1
DRONAGIRI RAIL TERMINAL	3.1
MAHARASHTRA STATE WARE. CORP. CFS	1.7
CWC LOGISTIC PARK - Opr.Hind Trmnl.	2.0
NAVKAR CORPORATION LTD.YARD-III CFS	4.1
International Cargo Terminals & Infrastructure Private Limited-CFS	2.4
Maersk Annex (APM)CFS	3.3
International Cargo Terminal CFS	2.7
SBW Logistics CFS , Navi Mumbai	5.8

JNPT Region : Cluster Analysis

Base on container movement from port to CFS in Mumbai region, 31 CFS's have been grouped into 9 Clusters on the basis of their vicinity.
Below table shows all the clusters and the relevant data for GTI and JNPCT terminal

CFS Cluster : GTI Terminal

	GTI terminal for month of July'18			
Clusters	No. of CFS's in Cluster	Distance from Port (Km)	Import cycle time (in Hrs)	Export cycle time (in Hrs)
Cluster 1	1	8	1.8	4.94
Cluster 2	6	13	2.5	4.91
Cluster 3	6	11	2.1	5.02
Cluster 4	1	13	3.3	6.06
Cluster 5	2	25	3.5	3.04
Cluster 6	6	25	4.8	8.60
Cluster 7	4	12	2.1	5.52
Cluster 8	1	34	6.2	10.48

CFS Cluster : JNPCT Terminal

	JNPCT terminal for month of July'18			
Clusters	No. of CFS's in Cluster	Distance from Port (Km)	Import cycle time (in Hrs)	Export cycle time (in Hrs)
Cluster 1	1	8	1.6	2.3
Cluster 2	6	13	2.5	2.6
Cluster 3	6	11	2.1	2.7
Cluster 4	1	13	1.6	3.7
Cluster 5	2	25	4.1	2.0
Cluster 6	6	25	4.5	5.6
Cluster 7	4	12	2.8	3.2
Cluster 8	1	34	5.5	5.2

Export container usually aren't allowed in the port before the arrival of their respective vessel so this unplanned transportation of the export containers from the CFS's to Port can cause **bottlenecks**

JNPT Region : Cluster Analysis

Base on container movement from port to CFS in Mumbai region, 29 CFS's have been grouped into 9 Clusters on the basis of their vicinity.
Below table shows all the clusters and the relevant data for NSICT and NSIGT terminal

CFS Cluster : NSICT Terminal

NSICT terminal for month of July'18				
Clusters	No. of CFS's in Cluster	Distance from Port (Km)	Import cycle time (in Hrs)	Export cycle time (in Hrs)
Cluster 1	1	8	1.8	3.73
Cluster 2	6	13	2.6	4.46
Cluster 3	6	11	0.9	4.75
Cluster 5	2	25	3.5	2.51
Cluster 6	6	25	4.7	10.10
Cluster 7	4	12	2.4	4.65
Cluster 8	1	34	12.3	0.00
Cluster 9	1	20	0.0	-

CFS Cluster : NSIGT Terminal

NSIGT terminal for month of July'18				
Clusters	No. of CFS's in Cluster	Distance from Port (Km)	Import cycle time (in Hrs)	Export cycle time (in Hrs)
Cluster 1	1	8	3.3	3.96
Cluster 2	6	13	2.4	3.89
Cluster 3	6	11	1.7	4.21
Cluster 4	1	13	2.3	6.19
Cluster 5	2	25	3.4	2.22
Cluster 6	6	25	5.2	8.83
Cluster 7	4	12	2.5	5.01
Cluster 8	1	34	5.8	0.00

Export container usually aren't allowed in the port before the arrival of their respective vessel so this unplanned transportation of the export containers from the CFS's to Port can cause **bottlenecks**

Below mentioned are all the CFS in the respective Clusters :

Cluster 1
(JNPT Area)

- Speedy Multimode CFS,JNPT

Cluster 2
(Bhendkhal area, Khopate road)

- APM (Maersk India) CFS, Navi Mumbai
- Maersk Annex (APM)CFS, Navi Mumbai
- Balmer & Lawrie CFS, Navi Mumbai
- CWC Hind Terminal CFS, Navi Mumbai
- International Cargo Terminals (ULA) CFS, Navi Mumbai & Infrastructure Private Limited
- Gateway Distriparks CFS, Navi Mumbai
- International Cargo Terminal CFS

Cluster 3
Sonari area,JNPT road

- Punjab Conware CFS, Navi Mumbai
- Dronogiri Rail Terminal CFS, Navi Mumbai
- CWC Impex Park CFS, Navi Mumbai
- CWC Dronagiri CFS, Navi Mumbai
- Maharashtra State Corp CFS
- Seabird CFS, Navi Mumbai

Cluster 4
(Chirle area , JNPT road)
- Vaishno Logistics CFS, Navi Mumbai

Cluster 5
(Plaspa area, Coachi kanyakumari Highway)
- JWC Logistics Park CFS
- Ocean Gate CFS, Panvel

Cluster 8
SBW

Cluster 6
(Salva apta rd area, Bangalore highway)

- Ashte Logistics CFS, Panvel
- Apollo Logisolutions CFS, Panvel
- Indev Logistics CFS, Panvel
- Navkar Corporation Yrd 1 CFS, Panvel
- Navkar Corporation Yard 2 CFS, Panvel
- Navkar Corporation Yard 3 CFS, Panvel

Cluster 7
(Patilpada area, Khopate JNPT road)

- All Cargo Logistics CFS, Navi Mumbai
- Transindia Logistics Park, Navi Mumbai
- Ameya Logistics CFS, Navi Mumbai
- Continental Warehousing CFS, Navi Mumbai

Thank You !!