Top 10 Farms by Net Volume of Collection

Farms	Net Volume (Ltrs.)	Avg. Fat %	Avg. SNF %
FARM_379	463.33	4.46%	8.60%
FARM_745	443.05	4.54%	8.56%
FARM_141	399.92	4.07%	8.43%
FARM_589	379.77	3.98%	8.47%
FARM_483	369.16	3.75%	8.28%
FARM_552	351.14	4.62%	8.61%
FARM_303	341.11	4.33%	8.52%
FARM_401	337.61	3.77%	8.21%
FARM_280	318.53	3.81%	8.58%
FARM_757	308.91	4.00%	8.57%
Grand Total	**3712.53**	**4.18%**	**8.50%**

Fat Percentage Range - 3% to 6%

SNF Percentage Range - 8.5% to 9.5%

Cow Milk with Fat and SNF percentages near to the minimum acceptable levels may need blending to get the desired levels for products and legal requirements.

3 farms have low Fat % and two farms have low SNF %. Two farms are common in both issues. It's necessary to investigate and take corrective actions for those farms in order to increase their contribution in quality milk production.

Bottom 10 Farms by Net Volume of Collection

Farms	Net Volume (Ltrs.)	Avg. Fat %	Avg. SNF %
FARM_165	5.7	4.20%	8.04%
FARM_653	5.44	3.96%	8.12%
FARM_67	5.4	4.03%	8.49%
FARM_293	5.25	4.33%	9.29%
FARM_335	5.01	4.61%	8.88%
FARM_287	5	4.54%	8.44%
FARM_344	5	3.68%	8.37%
FARM_297	5	4.50%	8.45%
FARM_17	4.85	3.99%	8.30%
FARM_729	4.64	3.07%	8.28%
Grand Total	**51.29**	**4.09%**	**8.47%**

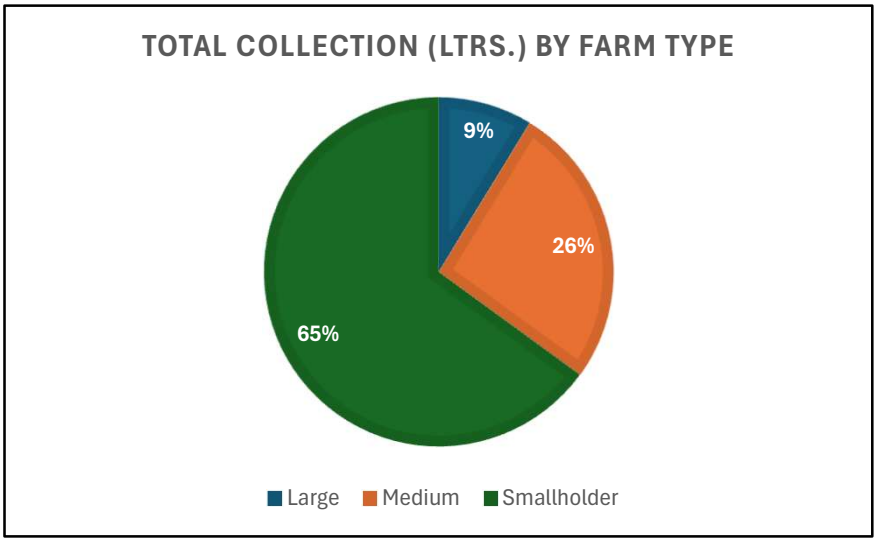
Fat Percentage Range - 3% to 6%

SNF Percentage Range - 8.5% to 9.5%

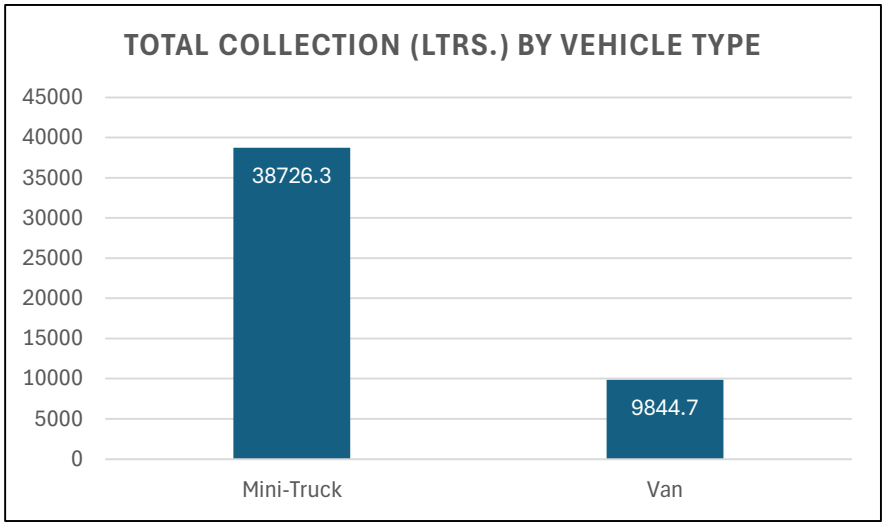
Cow Milk with Fat and SNF percentages near to the minimum acceptable levels may need blending to get the desired levels for products and legal requirements.

These farms can be incentivised to improve their overall contribution. They might be very small as well. One farm has low Fat %. Two farms have low SNF %. Investigation and corrective actions are needed.

Section 1: Fat, SNF and Collection Performance of Top 10 and Bottom 10 Farms by Net Collection

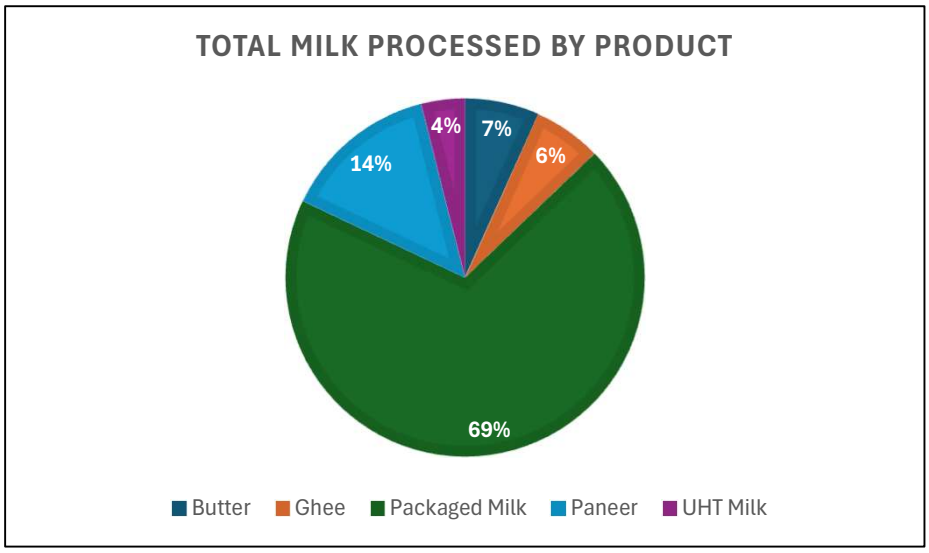


Smallholders are the largest contributors among farm type. It means that they are being benefitted and encouraged by the incentives they get through the cooperative milk corporation. Also, this is expected in smaller villages. This shows that small quantities of milk are collected on a large scale. This is fine, but results in more pressure on quality assuarance and legal compliance. If there is even a minor issue in SOPs, it can have bigger impact. Therefore, standardisation of the procedure and continuous monitoring of quality parameters is essential.

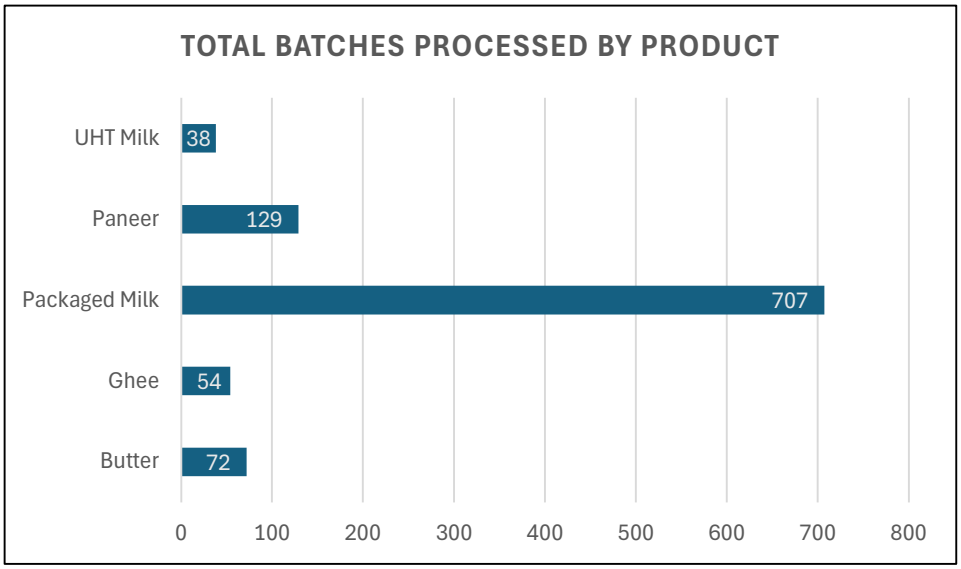


Mini-Trucks are always preferred for the transportation of the milk to chilling centers. The maximum collection is transported through Mini-Truck segment, which is almost 80% of the total collection. This is definitely suitable for short distance transportation. No any concerns here.
Note that the transportation data from chilling centres to plants is not collected in this SCM data, as this process is often handled by Insulated tankers with nil spoilage, it is not so much concerning, and requires less frequent monitoring.

Section 2: Milk Collection by Farm and Vehicle Type

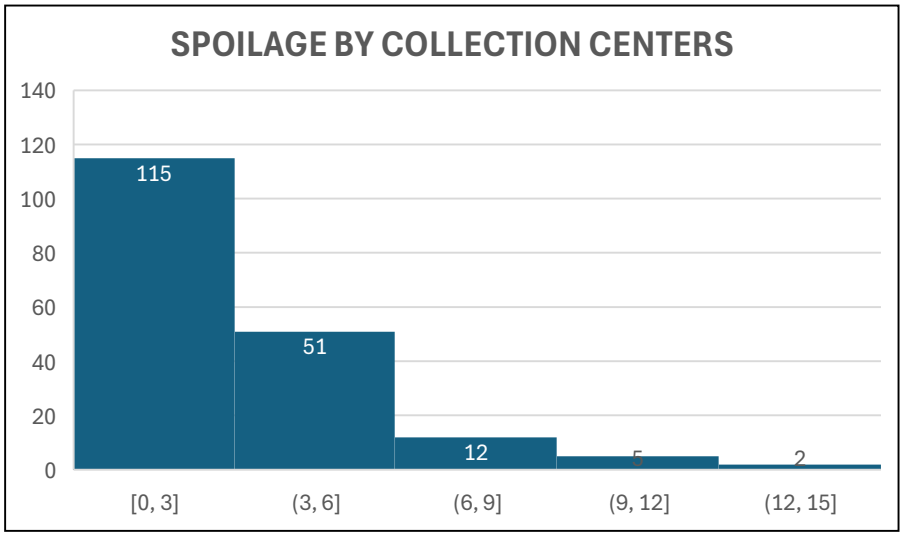


Priority is given to the Packaged Milk Segment, with about 69% of total collected milk being utilised. The second segment in terms of utilisation is Paneer, with 14% of total milk collected.
This is expected, because people prefer Ghee and Butter more in festive seasons, and first semester of the year has no major festivals. Paneer is more casually consumed by people, even in non-festive seasons.

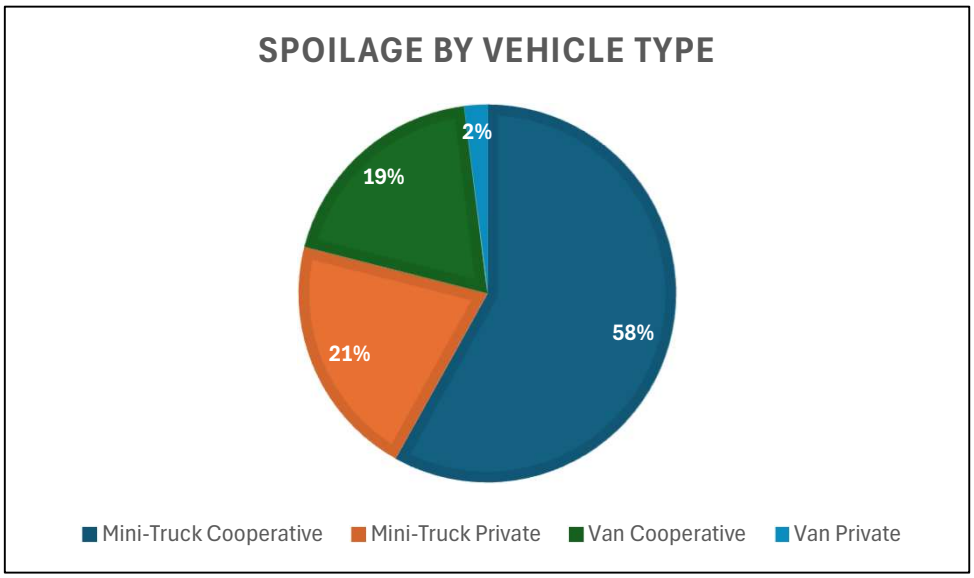


This graph is very much aligned with the expectations. People regularly consume Packaged Milk. On the other hand, Paneer is more casually consumed by people, even in non-festive season. UHT Milk segment is not popular overall. Ghee and Butter are more consumed in festive seasons, therefore, their popularity would be less. It can be said that the batches are being managed according to the demand trend. No concerns here.

Section 3: Processed Milk Volume and Batches by Products

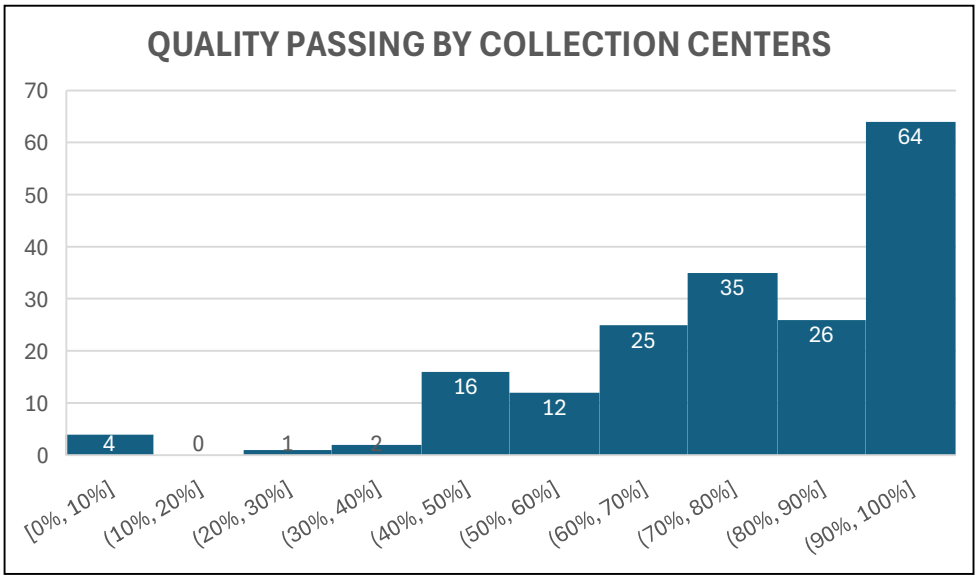


The spoilage rate per collection center is much lower, with most of the collection centers lying in the 0 to 6 liters spoilage range. This aligns with the expectations. Only a couple of collection centers have much higher spoilage rate of about 12 to 15 liters. All collection centers must be investigated in order to enforce SOPs to reduce the spoilage. This can save as high as 400 liters of milk. Further, a zero spoilage policy can be designed.

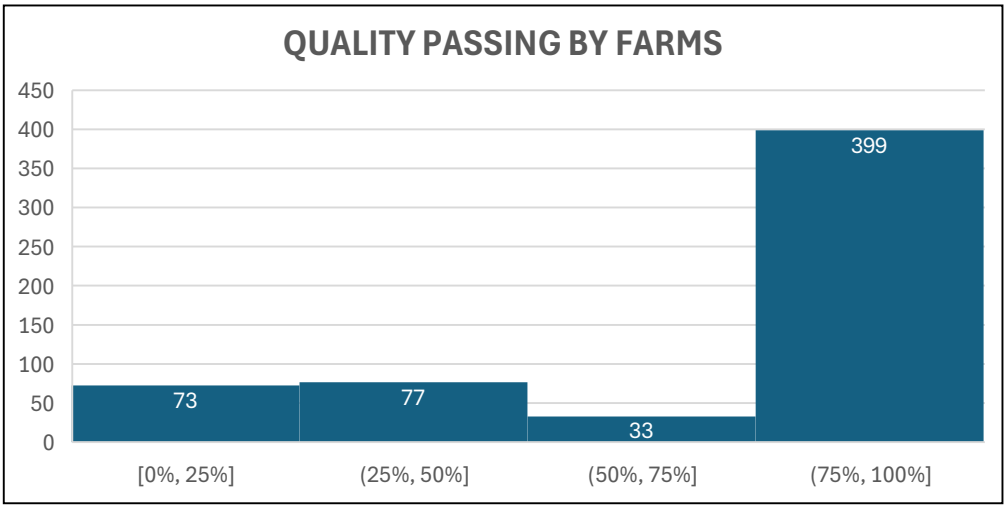


In terms of spoilage in vehicles, the Mini-Truck Cooperative segment has the largest share of spoilage. This is due to that fact that it is the most used segment for milk transportation from collection centers to chilling centers. Mini-Truck Private comes after it. Overall picture looks as expected. Still, operations can be analysed to reduce spoilage. Mainly, the handling of cans that carry the milk can be analysed in order to achieve zero spoilage in vehicles.

Section 4: Spoilage Analysis by Collection Centers and Vehicle Types

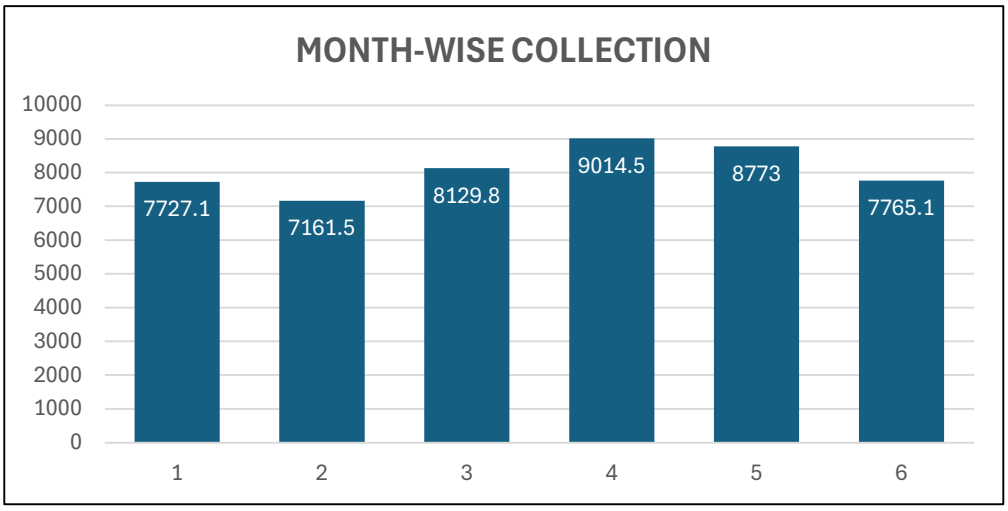


Out of total 185 CCs from which milk was collected, only 64 are able to achieve quality passing rate of or above 90%. Most of the centers lie in the range of 50% to 90% quality passing. Improvements are needed to be made in order to increase the quality passing rate, so that about 5000 to 7000 liters of milk can be recovered to make high quallity products. Milk collected from these areas is needed to be inspected in order to investigate the failure causes.

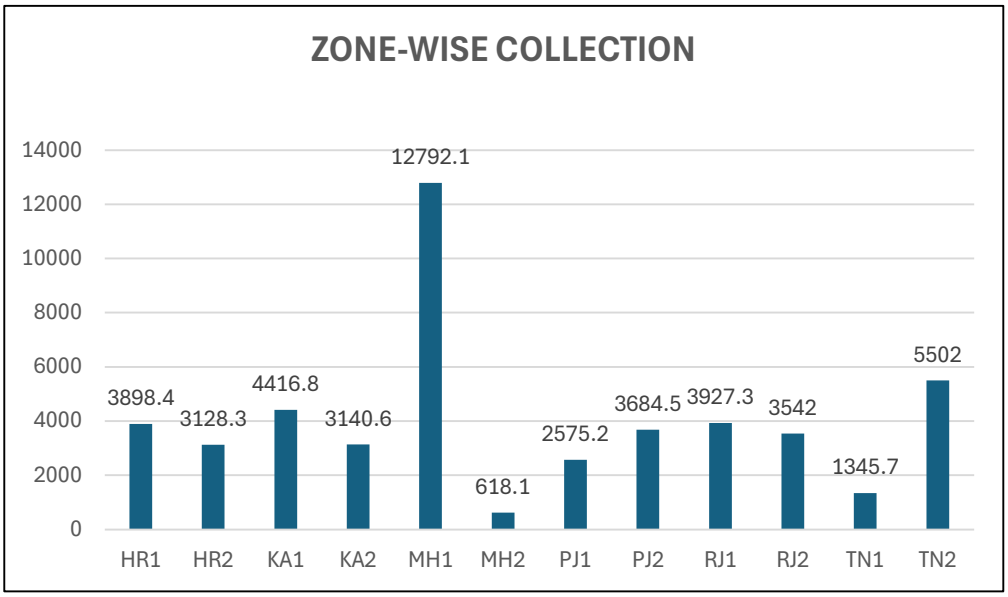


Most farms from which milk was collected had quality passing rate of 75% to 100%. 183 farms have quality passing rate only upto 75%. Investigations are needed in order to find out possible issues with farms or farmers. Not all farms will have the same quality standards, but we can ensure the minimum quality awareness among farmers, and their operations at farms. This will help to gain about 30% of quality passing rate.

Section 5: Quality Analysis by Collection Centers and Farms

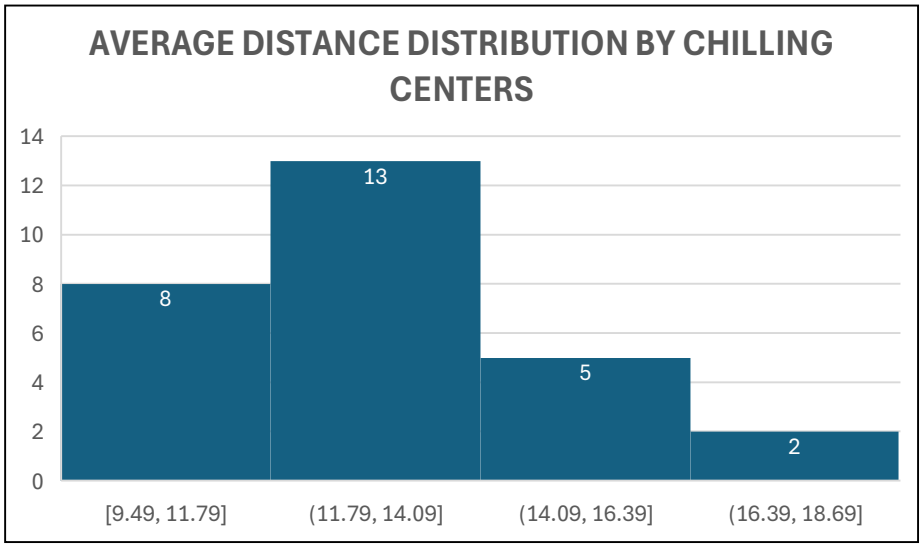


During this six-months period, milk collection is consistent every month. Collection per month looks almost similar, and no major changes in volume can be seen. For the month of March, April and May, collection was slightly raised, and in January, February and June, the collection was slightly less. Although, hot season should have reduced overall milk production due to heat stress in cows, more collection is observed during that period. This contrast cannot be effectively explained, as milk production rates per cow are not directly relevant to SCM data and hence are not collected.

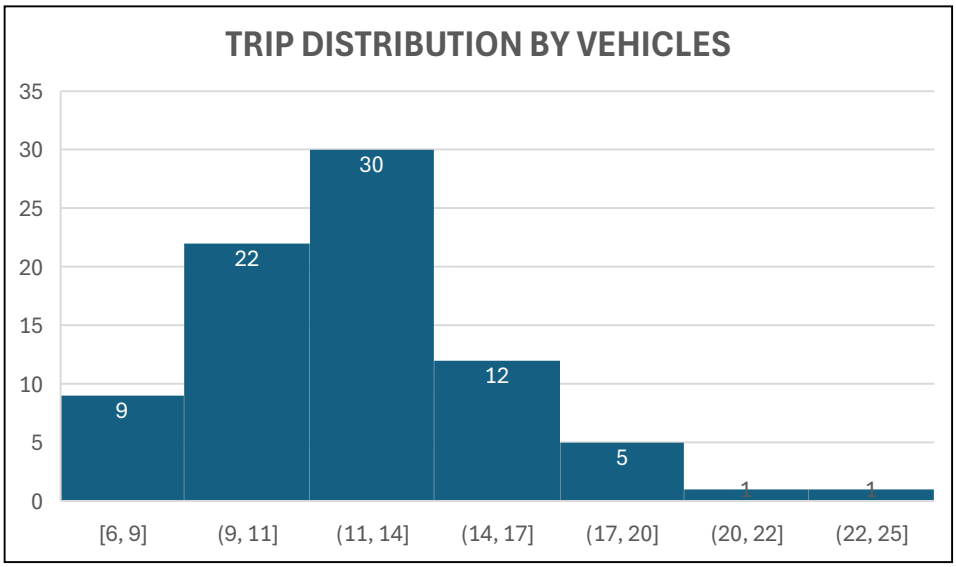


By zone, it can be seen that MH1 is the largest zone by total milk collection. Collection in Maharashtra state is largest among all. This is because Gujarat Region doesn't have a processing plant, resulting the milk stock being directed to Mumbai. If the plants and chilling centers are able to handle the load comfortably, it's fine, but still, it suggests that there is a need to optimise the supply chain for these regions to get a balanced supply everywhere, according to the product requirements and specialisations.

Section 6: Month-wise and Zone-wise Collection

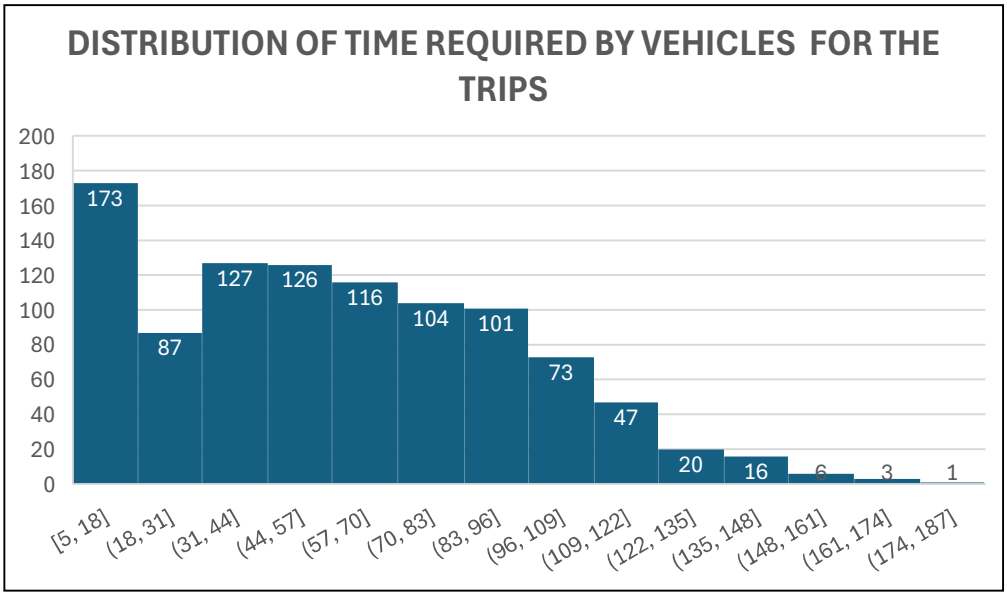


It can be seen that most of the collection centres lie in 11 to 15 kilometers from the chilling centres on an average. This distance is ideal for milk to be transported to the chilling centres without much quality loss. There is currently no any issue with distances.



Most of the vehicles completed 9 to 14 trips. This number is expected for 180 days, and a total of 80 vehicles. This number also shows that the vehicles are being utilised in a healthy range, and no vehicle is overutilised. A couple of vehicles have also completed more than 20 trips. This setup seems to be a shift based mechanism, where drivers and vehicles have to serve different areas in the zone. Also, as this data is a subset of the whole data, it may not represent the full picture in terms of vehicle utilisation.

Section 7: Distance Analysis by Chilling Centers and Vehicle Trips

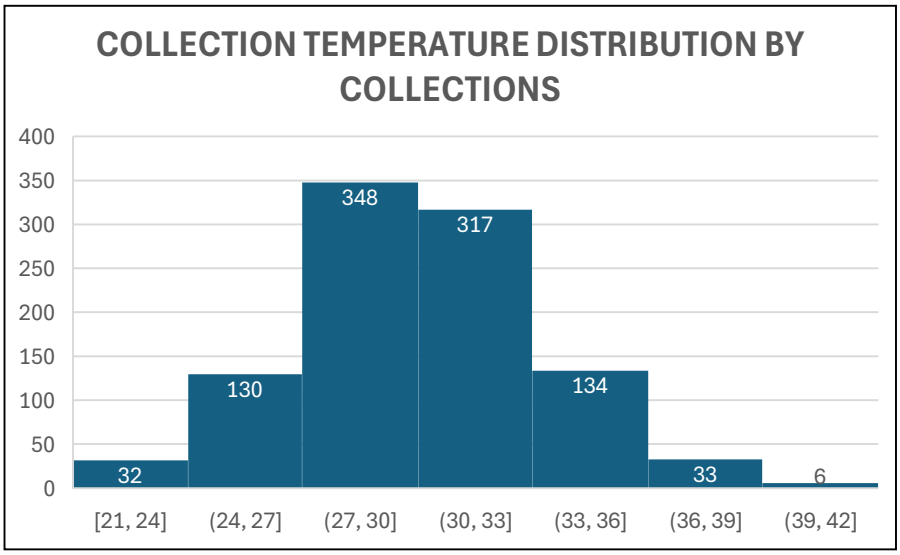


This plot shows the distribution of time needed by the vehicles to travel from the collection centre to the chilling centre. Ideally, upto 2 hours are fine. For the sake of a safety factor, it can be said that anything above 90 minutes is risky, in terms of quality. Upto 150 trips took more time. Operational analysis of each collection and transportation stage is needed in order to understand the posssible causes, because most of the chilling centres lie in 11 to 15 Km. range. This will futher help to reduce upto 45 mins of transit time.

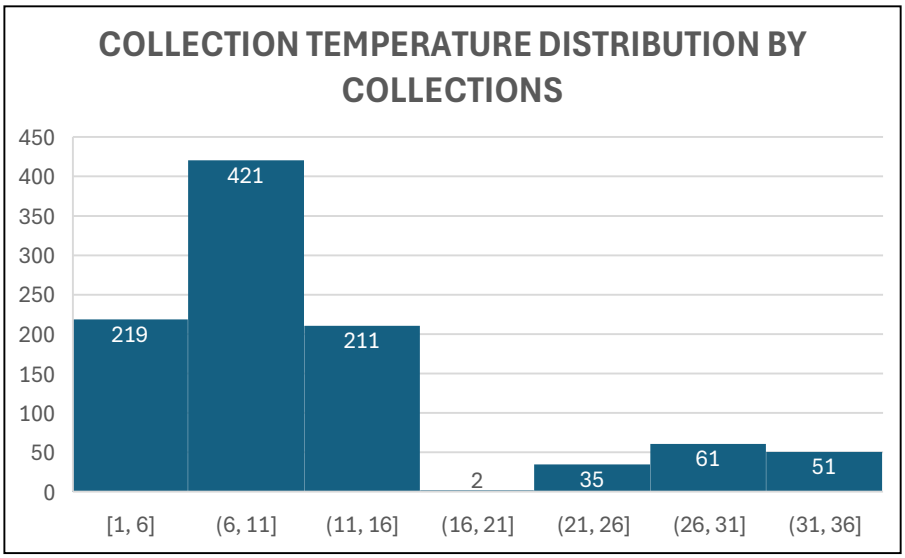
Vehicle ID	Transit Time
TRUCK_016	1647
TRUCK_039	1394
TRUCK_019	1273
TRUCK_053	1251
TRUCK_042	1228
TRUCK_012	1203
TRUCK_054	1191
TRUCK_049	1085
TRUCK_028	1068
TRUCK_032	1021
Grand Total	**12361**

These are the top 10 vehicles by the sum of total time they required to complete the trips. Given that the distances are within 11 to 15 Kms., these must be the worst performers. They are needed to be investigated, including their routes, drivers, and the trips they completed. They may have issues, or their specific trips may have issues. By inspecting them, transit time can be reduced or potential issues with routes and trucks can be solved.

Section 8: Transit Time Analysis by and Vehicle Trips

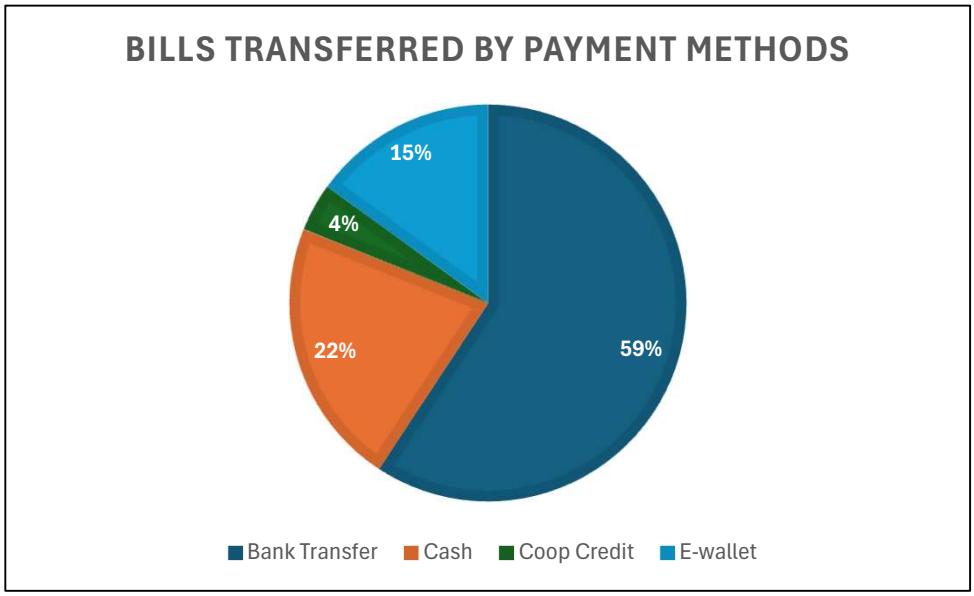


It can be seen that most of the collections have about 27°C to 33°C temperatures. This shows that the milk is slightly cooled from milking temperature to normal room remperaure, during handling and carrying. There is not a big issue with respect to quality here, but farmers must be notified to bring their milk as early as possible after milking, to reduce any quality issues tthat may arise due to late collection (more that about 30-35 minutes).

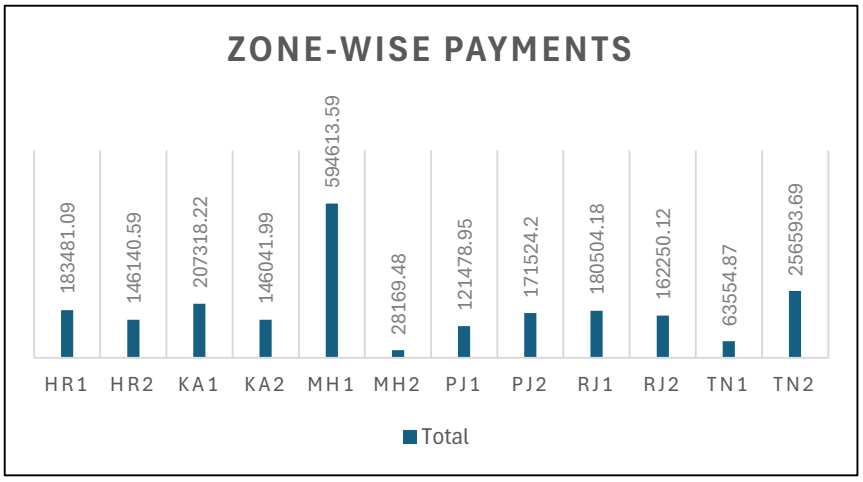


Ideally, chilled milk temperature must be in between 1°C to 6°C. only about 219 collections have stayed in this range, and all others have higher temperature. This is not desired. It's needed to inspect the tankers that carry milk from chilling centres to plants. Note here that the transit time for chilling centres to plants, as well as the data about tankers is not collected in this SCM data, as chilled milk is often considered as safe for longer transit hours with nil spoilage. The temps from 21°C to 36°C show the direct trips that were from collection centres to plants, bypassing chilling stage due to distance advantage.

Section 9: Collection and Arrival Temperature Analysis



Overall money transfer policy looks good, with larger preference to direct bank transfers. Only 22% payments are direct cash payments. This aligns with a more transparent and digital first payment approach. Improvements can be made to further reduce the amount of cash based payments wherever possible. The potential may vary.



As previously noted, the MH1 zone had the most milk collection, and hence most payments are transferred in that zone. This is expected. As the rates are directly related to Fat and SNF Percentages, They are usually proportional to the quality of the milk, based on these parameters.

Section 10: Analysis of Payments by Payment Methods and Zones