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| Sr No. | Names of Data (sub)sets | Explanation |
| 1 | Milk Production Registration (MPR data) | Test-day records of producing cows on milk, fat%, protein%, Somatic cell count, number of lactations, parity, etc. |
| 2 | Animal removal/ exit from herd records (Exit data) | Exit date of animals, code of exit (dead, alive/no exit, slaughter, export) |
| 3 | Lactation records data (Lactation data) | Lactation records on 305-milk, 305-fat, 305-protein, calving date, etc. |
| 4 | Insemination records (Insemination data) | Records of inseminations per parity, total inseminations, type of insemination, agency/ inseminator, etc) |
| \* | Herd summary data (Herd data) | Number of animals in herd, number culled, number producing, average annual production of herd, average age of herd, etc. |

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| Editing steps | Action | Number of animals | Number of farms |
| 0 | Raw data from 2009-2019 as received from CRV | 6,033,922 | 19,885 |
| 1 | Select commercial farms   1. Farms active > 5 years between 2009-2019 2. Average number of producing animals per farm > 30 (with more than 25 in any year) 3. Farms with more than 4 test-days on average per year | 5,681,833 | 15,916 |
| 2 | Merge 4 data subsets (animals with observations in all four datasets retained)  (Details of datasets in Table 1) | 5,289,957 | 14,618 |
| 3 | Filter/ select final data   1. Remove missing data, missing birthdate 2. Remove production records with questionable records (eg. Parity = 60) 3. Remove records of animals that were sold multiple times (animals on > 2 farms before exit) | 4,779,676 | 13,936 |

Table 2.

A removal rate of cows from farms was defined which included the events in this modified data set.

This removal rate estimate is lower than the national culling rate for the corresponding years as it did not include the involuntary culling, natural deaths or export of cows to other countries but only voluntary culling and dairy salessales of cows

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| Factor | Abbrev. | Explanation | Levels | No. of Test-day records |
| Lactation value | LV | Relative milk production level on test-day in comparison to the herd average of 100.  Three levels represent less than 90, between 91 and 110, more than 110 LV, where 100 is herd average. | below average | 26,023,175 |
|  | average | 65,532,040 |
|  | above average | 22,950,930 |
| Parity | - | Parity number of cows | 1st parity | 34,517,660 |
|  | 2nd parity | 28,438,152 |
|  | 3-4th parities | 35,092,020 |
|  | > 4 parities | 16,458,313 |
| Very high-Fat protein ratio | highFPR | Indicator for subclinical ketosis, reflected by the proportion of tests in first 100 days of lactation resulting in FPR>1.5 | < 50% | 112,705,286 |
|  | ≥ 50% | 1,800,859 |
| Very low-Fat protein ratio | lowFPR | Indicator for Sub-acute Rumen Acidosis. reflected by the proportion of tests in first 100 days of lactation resulting in  FPR < 0.9 | < 50% | 114,436,777 |
|  | ≥ 50% | 69,368 |
| Test day-Somatic cell count (x 1,000) | SCC | Somatic cell count in thousands per millilitre of milk on test-day | < 200 | 91,912,692 |
|  | ≥ 200 and < 600 | 15,257,987 |
|  | ≥ 600 and < 1000 | 3,202,567 |
|  | ≥ 1,000 | 4,132,899 |
| Insemination | Insem | Rolling average of total number of inseminations per parity | < 2 | 63,753,449 |
|  |  | < 2 and ≥ 5 | 47,408,119 |
|  |  | ≥ 5 | 3,344,577 |
| Policy Periods | Period | Time periods of test-day records MQ (Milk quota): 2009-2013,  PMQ (post-milk quota): 2014-2016,  PH (Phosphate regulation): 2017-2019 | MQ | 49,613,372 |
|  |  | PMQ | 33,652,664 |
|  |  | PH | 31,240,109 |

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