



# Meta-data for Trase cattle logistics map v2.0

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## Summary

This nationwide map represents, to the best of our knowledge, the locations of 1547 cattle slaughterhouses and live cattle export facilities in Brazil. This dataset is a working product, and while every effort has been taken to avoid errors, Trase and UCLouvain do not accept responsibility for the accuracy of these data. Users who notice errors or would like to suggest improvements or new features should please to contact [info@trase.earth](mailto:info@trase.earth), and these can be incorporated into later releases.

By “slaughterhouses” we mean facilities which slaughter animals (excluding facilities which handle animal products but are not directly involved in slaughter). Our map should be seen as a map of professional slaughterhouses appearing in official sanitary inspection datasets; these are facilities owned by businesses, who have asset-level tax registrations provided by the National Registry of Legal Entities (CNPJ). It does not include small-scale slaughter for personal consumption or slaughter which is not linked to a slaughtering business.

This map was built by identifying cattle slaughterhouses and live cattle exporters listed in multiple data sources (Tables 1 & 3), including a government business registry, Guia de Trânsito Animal (GTA) data from 23 states, and lists of slaughterhouses audited under different food safety inspection systems (both federal and state inspection systems, SISBI-POA, and SISBOV).

Businesses identified as slaughterhouses in the above data have been classified into three types (listed in the column “SUBCLASS”), depending on the evidence available that they are indeed slaughterhouses.

Table 1 – Typology of slaughterhouses.

SUBCLASS	DESCRIPTION	NUMBER OF FACILITIES
CONFIRMED	Facilities with a CNPJ: [i] listed as a slaughterhouse in at least one sanitary dataset	896

	(SIF, SIE, SISBOV, SISBI, SISBOV) & which appears as a point of slaughter in the GTAs; [ii] appearing in sanitary datasets with a primary CNAE of cattle slaughter ('1011201' or '1011205').	
PROBABLE	Appears in sanitary datasets, but not in the GTAs or does not have a primary CNAE of cattle slaughter.	524
PROBABLE (MULTIFUNCTIONAL)	As above, but has multiple CNAEs listed; these are multi-functional facilities, which may handle slaughter but also other related functions, e.g. meat processing or storage.	99
LIVE CATTLE EXPORTER	Facilities exporting cattle, as reported in shipping data.	28

The location of each slaughterhouse was then determined by a three-stage process, using a hierarchy of data. [i] Where available we use coordinates listed in the SISBI dataset. Next, we use the facility's postal code (CEP) and the national postal code database (DNE) to map the location, and where the CEP is not available, we assign the facility to the municipal capital. The spatial resolution of the mapping of each slaughterhouse is listed in the column RESOLUTION, and the number of facilities classified using each dataset are as follows:

Table 2 – The number of facilities identified using each geo-spatial dataset.

RESOLUTION	NUMBER OF FACILITIES
CEP	897
MUNICIPAL CAPITAL	525
SISBI	74
UNKNOWN LOCATION	51

### Changes from the v1.0 of the Brazil beef logistics map

The output differs from v1.0 in several key ways:

1. We include live cattle exporters where we previously only included slaughterhouses. This permits easier matching with Trase's data on trade flows.
2. Most importantly, v2.0 is focused on slaughter facilities appearing in key sanitary inspection datasets. In v1.0, the list included all facilities with slaughter CNAEs, which generated a much longer list of facilities: 7671 in total. Companies are legally obliged to register the function of their facilities (i.e. to designate the CNAE), though the reliability of these self-declared data are not verified. The decision in v2.0 to focus on

facilities corroborated by sanitary inspection effectively removes the ‘unconfirmed’ SUBCLASS (see v1.0 methodology) and narrows the dataset to facilities where we have strong confidence of their slaughter activity.

3. The SIF and SIE data were updated for 2020, and we include a much richer SISBI dataset on slaughter facilities.
4. We no longer use the Imazon or Abiec maps to identify slaughterhouse locations. Instead we use new SISBI data, where available, and the CEP or municipal capital where not. The exact location of some slaughterhouses appearing in the Imazon and Abiec data may not be as accurate in v2.0, where we no longer use these field-validated datasets.
5. We updated the data on company zero deforestation commitments, using data from Monitac (see Table X), rather than data from Amaral (2016), which were a (now outdated) snapshot in time.

### Columns

1. CNPJ – the Cadastro Nacional da Pessoa Jurídica (acronym: CNPJ, National Registry of Legal Entities in English) of the facility.
2. COMPANY – Name of the company listed in the business registry (“Nome Empresarial” in Portuguese). In some cases, the entity listed is the municipality government – these cases refer to slaughterhouse facilities that are publicly owned and operated by the municipality.
3. STATE – the state in which the slaughterhouse is located.
4. MUNICIPALITY – the municipality in which the slaughterhouse is located.
5. GEOCODE – The municipal code, a unique identifier used by the Instituto Brasileiro de Geografia e Estatística (IBGE), as recorded in the government registry of businesses. Businesses can relocate, however, and where the location of the facility changes over time (according to the GTAs), the most recent location is reported.
6. LAT – latitude. The map is projected in WGS84 (“+proj=longlat +datum=WGS84 +no\_defs +ellps=WGS84 +towgs84=0,0,0”).
7. LONG – longitude. The map is projected in WGS84 (“+proj=longlat +datum=WGS84 +no\_defs +ellps=WGS84 +towgs84=0,0,0”).
8. RESOLUTION – the spatial location of the slaughterhouse is listed as: LAPIG, ABIEC, IMAZON, CEP, or MUNICIPAL CAPITAL, depending on the dataset used to determine the location.
9. ADDRESS – The address listed in the business registry, or other datasets if not available.
10. CEP – the facility’s postal code, if known.
11. SUBCLASS – Facilities are classified as one of three tiers of slaughterhouse, depending on the evidence available that they are indeed active slaughterhouses (Table 1).

12. INSPECTION\_LEVEL – Slaughterhouses are inspected at one of three levels in Brazil: at the national level (Serviço de Inspeção Federal, “SIF”), the state level (“SIE”), or the municipal level (“SIM”). In practice, inspection is incomplete, particularly at the municipal level. The level of inspection for slaughterhouses was identified from published lists of SIF- and SIE-inspected slaughterhouses, and information contained in the datasets from the Sistema Brasileiro de Inspeção de Produtos de Origem Animal (SISBI-POA) and Sistema Brasileiro de Identificação e Certificação de Origem Bovina e Bubalina (SISBOV). Where slaughterhouses were classified as being inspected by multiple systems (e.g. they appear in SIF and SIE lists, their higher inspection level is recorded (i.e. SIF, in this case). Where slaughterhouses did not appear in any list, the INSPECTION\_LEVEL is recorded as “UNKNOWN”. The data for SIE-inspections and SIM-inspections are incomplete (because SIE data was available for only 21 states, and there is no comprehensive published list of SIM-inspected slaughterhouses), and so are an underestimate of the number of inspected facilities.
13. OTHER\_NAMES – Other names associated with the business listed in each dataset. These names include the “Título do Estabelecimento”, “Razão Social”, and “Nome Fantasia” where available.
14. INSPECTION\_NUMBER – The identification number assigned to SIF- and SIE-inspected slaughterhouses. These ID numbers are recorded in the sources described above.
15. TAC – “SIM” means that the slaughterhouse has signed a Termos de Ajustamento de Conduta (TAC) with the Ministério Público Federal (MPF) – a commitment to avoid purchasing cattle from properties with ongoing illegal deforestation. These data come from the 2017 Imazon report.
16. STATUS – This is recorded as “INATIVO” or NA. Where the slaughterhouse is recorded as being inactive (i.e. no longer operating, “INATIVO”) in the SIF database or Imazon’s slaughterhouse map, this is recorded here. All other facilities are listed as NA.
17. TYPE – The information about the facility type and capacity recorded in the SIF/SIE/SISBI/SISBOV datasets.
18. AUDITADO – Whether or not the facility’s TAC was audited by the MPF.
19. PERC\_IRREGULARIDADE – the percentage irregularities reported in the MPF audit.
20. YEARS\_APPEAR\_IN\_GTAS – the years for which the facility is identified in Trase’s GTA dataset.
21. CNAE\_PRINCIPAL – the main CNAE of the facility.
22. CNAE\_SECONDARY – the secondary CNAEs of the facility.
23. SOURCE – the sanitary dataset in which the facility was identified.

### Data sources

Table 3 – List of data sources used to identify and classify slaughterhouses.



Name	Notes
Business registry	These data include the name and location of each business, along with its unique identifier the Cadastro Nacional da Pessoa Jurídica (acronym: CNPJ, National Registry of Legal Entities in English), the date the business was opened, and the Classificação Nacional de Atividades Econômicas (National classification of Economic Activity), a self-declared activity associated with each facility. When identifying slaughterhouses, we searched for businesses with primary or secondary business activities of “1011201 (Frigorífico - abate de bovinos) and “1011205” (Matadouro - abate de reses sob contrato, exceto abate de suínos).
GTAs	Guia de transito animal – records of the movement of batches of cattle between farms, and between farms and slaughterhouses. These freely-available data were downloaded from state and federal websites, to build a dataset of 33 million GTAs from 23 states. The completeness of the GTA data vary by state (Table X).
SIFs	Government database of food businesses (including slaughterhouses) inspected at the federal level and permitted to export.
SIEs	Lists of state-inspected slaughterhouses were downloaded from state government websites for AL, AM, AP, BA, CE, ES, GO, MA, MG, MS, MT, PA, PB, PE, PR, RJ, RN, RO, SC, SP, and TO.
SISBI-POA	Lists of SISBI-registered food businesses (including slaughterhouses) were downloaded from the SISBI website. Also known as SGSI (‘Sistema de Gestão de Serviços de Inspeção’)
SISBOV	A list of SISBOV-compliant slaughterhouses was downloaded.
Monitac	The monitor of the TAC - the ‘Termos de Ajustamento de Conduta’, commitments by slaughterhouses to not purchase cattle from properties with illegal deforestation or forced labor.