# Brim Analytics overview and background for clinical data abstraction projects

## 1. Overview of Brim Analytics

Brim Analytics is a secure, cloud‑based platform designed to transform unstructured medical notes into high‑quality, structured data using large language models (LLMs). It allows research teams to upload clinical notes and other reference documents, define variables that describe the information they want to extract, run LLM‑powered label generation, review and correct the output, and export validated datasets. The platform is organized around projects that correspond to a particular abstraction task (e.g., “Pediatric brain tumours”). Each project contains uploaded notes, reference documents, a system of variables (normal and dependent), and permission settings for collaborators[[1]](https://docs.brimanalytics.com/article/26-creating-a-new-project#:~:text=A%20project%20in%20Brim%20has%3A).

### 1.1 Core components

| Component | Description & key points |
| --- | --- |
| **Projects** | Each Brim project has a name, uploaded medical notes, optional reference documents (e.g., PDFs of protocols), variables to be abstracted and permissioning rules[[1]](https://docs.brimanalytics.com/article/26-creating-a-new-project#:~:text=A%20project%20in%20Brim%20has%3A). Creating a new project requires “Can add project” permission and is done from the project drop‑down menu[[2]](https://docs.brimanalytics.com/article/26-creating-a-new-project#:~:text=1,Create). |
| **Notes (documents)** | The primary data source. Notes are uploaded as rows in a CSV file with required columns: NOTE\_ID (unique note identifier), PERSON\_ID (patient identifier), NOTE\_DATETIME (timestamp in YYYY‑MM‑DD HH:MM:SS format), NOTE\_TEXT (full text of the note), and NOTE\_TITLE (descriptive title, e.g., “Pathology Report”)[[3]](https://docs.brimanalytics.com/article/5-how-to-upload-notes#:~:text=Brim%20uses%20a%20%22Comma,sample%20Data%20CSV%20file%20here). Each combination of NOTE\_ID and PERSON\_ID must be unique[[4]](https://docs.brimanalytics.com/article/5-how-to-upload-notes#:~:text=Each%20row%20must%20have%20a,order%20to%20be%20successfully%20imported). Quotation marks inside the text should be escaped by doubling them[[5]](https://docs.brimanalytics.com/article/5-how-to-upload-notes#:~:text=Important%20Notes%3A). Structured data can be included by embedding a table in the NOTE\_TEXT column; Brim treats structured files like other notes[[6]](https://docs.brimanalytics.com/article/67-using-structured-data-in-brim#:~:text=Using%20Structured%20Data%20in%20Brim). |
| **Variables** | Variables describe specific pieces of information to extract from the notes. They are analogous to fields in a data abstraction protocol. Each variable has a descriptive name, data type (boolean, integer, float, timestamp or text), scope (many‑per‑note, one‑per‑note or one‑per‑patient), an instruction telling the LLM how to extract the value, optional option definitions, default value for empty responses, and other settings[[7]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=Fields). Variables can be created through the UI or uploaded via CSV. An organized system of variables can be grouped into “instruments” for logical grouping (e.g., Demographics, Labs)[[8]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=Choose%20which%20instrument%C2%A0the%20variable%20belongs,To%20assign%2C%20either). |
| **Dependent Variables** | A dependent variable (also called a “decision”) allows layered reasoning by combining the outputs of other variables. It requires a name, variable type, instruction and a list of input variables[[9]](https://docs.brimanalytics.com/article/23-layered-reasoning-with-dependent-variables#:~:text=Brim%20enables%20layered%20reasoning%20through,a%20concept%20called%20Dependent%20Variables). Dependent variables output one value per patient and have a default value for empty responses[[10]](https://docs.brimanalytics.com/article/23-layered-reasoning-with-dependent-variables#:~:text=Default%20value%20for%20empty%20response). Brim can automatically create a dependent variable along with the necessary input variables based on a high‑level description[[11]](https://docs.brimanalytics.com/article/20-automatically-creating-a-dependent-variable#:~:text=Brim%20allows%20you%20to%20automatically,description%2C%20and%20Brim%20automatically%20generates). |
| **Reference documents** | PDF or other documents uploaded as reference can be linked in variable instructions. They are stored separately and help the LLM access protocols or classification tables during extraction. |
| **Label generation & review** | Once notes and variables are in place, Brim runs a multi‑step generation process: prepare generation tasks; extract relevant snippets for each variable using variable instructions; perform variable‑level aggregation; generate dependent variables; and compare against validation data[[12]](https://docs.brimanalytics.com/article/29-data-aggregation-in-brim#:~:text=To%20support%20evidence,variables%20that%20leverage%20the%20process). Label generation can be run for a single patient, a batch of patients or all patients. Brim recommends an iterative workflow—generate labels for a single patient, review and refine variables, then expand to batches[[13]](https://docs.brimanalytics.com/article/11-label-generation-process#:~:text=Once%20you%27ve%20uploaded%20data%20and,it%27s%20time%20to%20generate%20labels). Reviewers can view LLM reasoning and provide feedback to improve instructions[[14]](https://docs.brimanalytics.com/article/43-viewing-and-improving-llm-reasoning#:~:text=LLM%20reasoning%20is%20represented%20by,with%20the%20generated%20label%20value). |
| **Export/validation** | After review, users can export the structured dataset. Brim supports validation datasets and calculates agreement metrics between generated labels and ground truth[[15]](https://docs.brimanalytics.com/article/29-data-aggregation-in-brim#:~:text=5). |

## 2. Data upload requirements

### 2.1 Uploading notes

Brim accepts a comma‑separated values (CSV) file where each row represents one note. The required header fields and formatting rules are:

1. **NOTE\_ID** – alphanumeric identifier for the note. Must be unique in combination with PERSON\_ID[[4]](https://docs.brimanalytics.com/article/5-how-to-upload-notes#:~:text=Each%20row%20must%20have%20a,order%20to%20be%20successfully%20imported).
2. **PERSON\_ID** – alphanumeric patient identifier. Combined with NOTE\_ID, this uniquely identifies a row[[4]](https://docs.brimanalytics.com/article/5-how-to-upload-notes#:~:text=Each%20row%20must%20have%20a,order%20to%20be%20successfully%20imported).
3. **NOTE\_DATETIME** – timestamp of when the note was written in YYYY‑MM‑DD HH:MM:SS format[[16]](https://docs.brimanalytics.com/article/5-how-to-upload-notes#:~:text=NOTE_DATETIME). Time can be 00:00:00 if unknown.
4. **NOTE\_TEXT** – full text of the note. Multi‑line text should be enclosed in quotes; internal quotes must be escaped by doubling them[[17]](https://docs.brimanalytics.com/article/5-how-to-upload-notes#:~:text=).
5. **NOTE\_TITLE** – descriptive title of the note (e.g., “Discharge Summary”, “Pathology Report”). Titles help when restricting variables to specific document types[[18]](https://docs.brimanalytics.com/article/5-how-to-upload-notes#:~:text=NOTE_TITLE%20The%20title%20of%20the,ED%20Intake).

To upload:

* Go to **Project Setup** in the project dashboard, select **Upload CSV**, choose the prepared file and click **Upload**[[19]](https://docs.brimanalytics.com/article/5-how-to-upload-notes#:~:text=1,the%20status%20in%20the%20table). The status will indicate when upload is complete[[20]](https://docs.brimanalytics.com/article/5-how-to-upload-notes#:~:text=%2A%20Click%20on%20the%20,when%20the%20data%20is%20ready).
* After uploading, use **Preview Data** to confirm the notes loaded correctly[[21]](https://docs.brimanalytics.com/article/5-how-to-upload-notes#:~:text=5.%20Preview%20Data%20,Preview%20Data).
* Structured data tables can be uploaded the same way; each date’s data may be split into separate notes to enable longitudinal reasoning[[22]](https://docs.brimanalytics.com/article/67-using-structured-data-in-brim#:~:text=Uploading%20Structured%20Data).

### 2.2 Uploading variables via CSV

Brim supports bulk creation of variables or dependent variables using CSV files. Two slightly different formats exist:

**Normal variables CSV format**[[23]](https://docs.brimanalytics.com/article/7-how-to-upload-variables-via-csv#:~:text=CSV%20Format%20for%20Variables):

variable\_name,instruction,prompt\_template,aggregation\_instruction,aggregation\_prompt\_template,variable\_type,scope

* variable\_name – descriptive name.
* instruction – natural‑language description of how to extract the variable.
* prompt\_template – optional prompt that overrides the default LLM prompt; can include placeholders {name}, {instruction}, {var\_type}[[24]](https://docs.brimanalytics.com/article/7-how-to-upload-variables-via-csv#:~:text=Notes%3A%20Formatting%20Options%3A%20The%20following,Variable%20Type).
* aggregation\_instruction – instructs how to aggregate multiple values for one\_per\_note or one\_per\_patient variables[[25]](https://docs.brimanalytics.com/article/7-how-to-upload-variables-via-csv#:~:text=Aggregation%20Instruction%3A%20Instructions%20to%20aggregate,values%20for%20ONE_PER_PATIENT%20and%20ONE_PER_NOTE).
* aggregation\_prompt\_template – optional prompt for the aggregation stage.
* variable\_type – data type; options: boolean, text, integer, float[[26]](https://docs.brimanalytics.com/article/7-how-to-upload-variables-via-csv#:~:text=Variable%20Type%3A%20Type%20of%20data,Options%3A%20boolean%2C%20text%2C%20integer%2C%20float).
* scope – granularity; options: one\_per\_note, many\_per\_note, or one\_per\_patient[[27]](https://docs.brimanalytics.com/article/7-how-to-upload-variables-via-csv#:~:text=Scope%3A%20Granularity%20to%20extract%20data,from%20all%20notes).

**Dependent variables CSV format**[[28]](https://docs.brimanalytics.com/article/7-how-to-upload-variables-via-csv#:~:text=CSV%20Format%20for%20Dependent%20Variables):

decision\_name,instruction,decision\_type,prompt\_template,variables

* decision\_name – name of the dependent variable (decision).
* instruction – description of the decision logic.
* decision\_type – data type (boolean, text, integer, float).
* prompt\_template – optional prompt.
* variables – list of input variable names in JSON‑like format, e.g., ["variable\_1", "variable\_2"][[29]](https://docs.brimanalytics.com/article/7-how-to-upload-variables-via-csv#:~:text=Prompt%20Template%3A%20Prompt%20to%20use,to%20query%20the%20LLM).

To upload variables:

1. Navigate to **Project Setup** → **Variables**. Click **Upload Variables**[[30]](https://docs.brimanalytics.com/article/7-how-to-upload-variables-via-csv#:~:text=1,to%20a%20Sample%20CSV%20file).
2. Choose the CSV files for normal and/or dependent variables (two upload slots exist) and click **Upload**. The table will indicate completion[[31]](https://docs.brimanalytics.com/article/7-how-to-upload-variables-via-csv#:~:text=fields%20in%20each%20type%20of,when%20the%20variables%20are%20ready).
3. After upload, the variables appear in the **Variables** or **Dependent Variables** tab[[32]](https://docs.brimanalytics.com/article/7-how-to-upload-variables-via-csv#:~:text=,tab).

## 3. Defining variables

The **variable definition** is the primary way users communicate with Brim. A well‑designed variable tells the LLM exactly what to extract and how to handle edge cases. Key fields include[[7]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=Fields):

* **Name** – descriptive and consistent with the content.
* **Variable type** – one of text, boolean, integer, float or timestamp[[33]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=Variable%20type).
* **Scope** – determines how many labels can be produced: many\_per\_note, one\_per\_note, or one\_per\_patient[[34]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=Scope).
* **Instruction** – the most important field. It should:
* Clearly define what to extract.
* Provide semantics necessary to guide abstraction (e.g., definitions of categories, how to handle uncertain cases)[[35]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=Instruction).
* Specify temporal context (e.g., current vs. historical)[[36]](https://docs.brimanalytics.com/article/59-variable-best-practices#:~:text=%E2%9C%85%20Temporal%20Context).
* Include examples or anti‑examples to clarify how the variable should be labelled[[37]](https://docs.brimanalytics.com/article/59-variable-best-practices#:~:text=%E2%9C%85%20Examples).
* **Option definitions** – list of allowed values for categorical variables and definitions for each option[[38]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=Option%20definitions).
* **Default value for empty response** – value returned when no evidence is found (default is “No evidence”)[[39]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=Default%20value%20for%20empty%20response).
* **Reference today’s date** – check this only if the variable needs to reference the current date[[40]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=Reference%20today%27s%20date).
* **Reference raw text** – should usually be enabled unless the variable only references other variables[[41]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=Reference%20raw%20text%20from%20notes).
* **Restrict by document name/date** – optional filters to limit the variable to specific note types or date ranges[[42]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=Restrict%20by%20Document%20Name).
* **References** – list of other variables used as inputs; when referencing other variables, explicitly mention them in the instructions[[43]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=A%20variable%20can%20reference%20the,this%20works%20depends%20on%20scope).
* **Aggregation strategy** – for one\_per\_note and one\_per\_patient variables, choose a deterministic strategy (e.g., highest value, most recent) or provide a custom aggregation instruction[[44]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=Aggregation).
* **Only use true value in aggregation** – check for boolean variables where only “True” values should contribute[[45]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=Only%20use%20true%20value%20in,aggregation).

### 3.1 Best‑practice checklist for variables

Brim’s best‑practice guide recommends evaluating variables on four axes[[46]](https://docs.brimanalytics.com/article/59-variable-best-practices#:~:text=There%20are%204%20overall%20categories%3A):

1. **Simplicity** – ask a single, focused question. Complex questions should be decomposed into multiple variables[[47]](https://docs.brimanalytics.com/article/59-variable-best-practices#:~:text=1). Use limited categories instead of free text when possible[[48]](https://docs.brimanalytics.com/article/59-variable-best-practices#:~:text=%E2%9C%85%20Limited%20Categories%20).
2. **Semantics** – clearly describe what should happen when evidence is insufficient or when multiple values exist[[49]](https://docs.brimanalytics.com/article/59-variable-best-practices#:~:text=%E2%9C%85%20Insufficient%20Evidence). Specify temporal context and expected format[[50]](https://docs.brimanalytics.com/article/59-variable-best-practices#:~:text=%E2%9C%85%20Expected%20Format).
3. **References** – if a variable uses other variables as inputs (e.g., date of birth to calculate age), list them and explicitly reference them in the instruction[[51]](https://docs.brimanalytics.com/article/59-variable-best-practices#:~:text=3%29%20References%20).
4. **Completeness** – ensure the variable name, type, scope and intent align and include at least one example or anti‑example[[52]](https://docs.brimanalytics.com/article/59-variable-best-practices#:~:text=%E2%9C%85%20Consistency). The variable optimizer can help refine instructions after reviewing initial labels[[53]](https://docs.brimanalytics.com/article/59-variable-best-practices#:~:text=%E2%9C%85%20Optimization).

### 3.2 Advanced settings

When creating or editing a variable, clicking **Show Advanced Settings** exposes additional controls[[54]](https://docs.brimanalytics.com/article/54-advanced-settings-for-brim-variables#:~:text=Advanced%20Settings%20for%20Brim%20Variables):

* **Use Advanced LLM Model** – toggles a more sophisticated language model for nuanced variables[[55]](https://docs.brimanalytics.com/article/54-advanced-settings-for-brim-variables#:~:text=1,if%20available).
* **Prompt Template** – customizes the prompt used to generate labels; editing is only recommended for experts[[56]](https://docs.brimanalytics.com/article/54-advanced-settings-for-brim-variables#:~:text=2).
* **Aggregation Prompt Template** – similar customization for aggregation[[57]](https://docs.brimanalytics.com/article/54-advanced-settings-for-brim-variables#:~:text=3).
* **Index Type** – chooses how relevant snippets are selected (keyword, embedding or hybrid). Hybrid is usually appropriate[[58]](https://docs.brimanalytics.com/article/54-advanced-settings-for-brim-variables#:~:text=4).

## 4. Dependent variables (decisions)

Dependent variables allow **layered reasoning**, enabling complex decisions based on multiple variables. They return one label per patient and require[[59]](https://docs.brimanalytics.com/article/23-layered-reasoning-with-dependent-variables#:~:text=Brim%20enables%20layered%20reasoning%20through,a%20concept%20called%20Dependent%20Variables):

* **Name** – descriptive.
* **Variable type** – same options as normal variables[[60]](https://docs.brimanalytics.com/article/23-layered-reasoning-with-dependent-variables#:~:text=Variable%20type).
* **Instruction** – description of the decision logic, including definitions, semantics and temporal considerations[[61]](https://docs.brimanalytics.com/article/23-layered-reasoning-with-dependent-variables#:~:text=Instructions).
* **Variables/Dependent variables** – list of inputs used in the decision[[62]](https://docs.brimanalytics.com/article/23-layered-reasoning-with-dependent-variables#:~:text=Variables%2FDependent%20Variables).
* **Default value for empty response** – returned when no relevant evidence is found[[10]](https://docs.brimanalytics.com/article/23-layered-reasoning-with-dependent-variables#:~:text=Default%20value%20for%20empty%20response).
* **Option definitions** and **Prompt definition** – optional advanced fields for limited set of outputs or custom prompts[[63]](https://docs.brimanalytics.com/article/23-layered-reasoning-with-dependent-variables#:~:text=Option%20definitions).

Brim can **automatically generate** dependent variables and their input variables from a high‑level description; users should review and adjust the generated fields and instructions[[64]](https://docs.brimanalytics.com/article/20-automatically-creating-a-dependent-variable#:~:text=Brim%20allows%20you%20to%20automatically,description%2C%20and%20Brim%20automatically%20generates).

## 5. Label generation and review

After variables are defined and notes uploaded, Brim generates labels in several steps[[12]](https://docs.brimanalytics.com/article/29-data-aggregation-in-brim#:~:text=To%20support%20evidence,variables%20that%20leverage%20the%20process):

1. **Prepare generation** – create generation tasks.
2. **Variable generation** – extract candidate evidence snippets and assign labels using variable instructions[[65]](https://docs.brimanalytics.com/article/29-data-aggregation-in-brim#:~:text=Generation%20Step%20What%20happens%20for,a%20variable%20Elements%20Used).
3. **Variable aggregation** – combine many‑per‑note labels into one‑per‑note or one‑per‑patient values using aggregation strategies[[66]](https://docs.brimanalytics.com/article/29-data-aggregation-in-brim#:~:text=3).
4. **Dependent variable generation** – compute dependent variables using inputs[[67]](https://docs.brimanalytics.com/article/29-data-aggregation-in-brim#:~:text=4).
5. **Validation match generator** – compare generated labels against validation datasets and propagate corrections[[15]](https://docs.brimanalytics.com/article/29-data-aggregation-in-brim#:~:text=5).

Brim recommends an **iterative workflow**: generate labels for one patient to verify variable definitions, refine variables or add new ones, then generate a batch of patients and review[[13]](https://docs.brimanalytics.com/article/11-label-generation-process#:~:text=Once%20you%27ve%20uploaded%20data%20and,it%27s%20time%20to%20generate%20labels). Label generation settings allow overwriting only unreviewed labels or all labels[[68]](https://docs.brimanalytics.com/article/12-how-to-start-a-new-label-generation#:~:text=,Task). Users can view **LLM reasoning** associated with each label and provide feedback; this feedback can automatically optimize variable instructions for better future performance[[14]](https://docs.brimanalytics.com/article/43-viewing-and-improving-llm-reasoning#:~:text=LLM%20reasoning%20is%20represented%20by,with%20the%20generated%20label%20value).

## 6. Pediatric brain tumour background

Pediatric brain tumours are the **most common solid tumours in children** and are grouped by the World Health Organization into families based on histologic and molecular features[[69]](https://pmc.ncbi.nlm.nih.gov/articles/PMC9031600/#:~:text=Brain%20tumors%20are%20the%20most,further%20updated%20in%20the%202021). Understanding these categories and care pathways helps when designing variables and prompts for abstraction.

### 6.1 Classification (2021 WHO CNS5)

The 2021 fifth edition of the WHO CNS classification distinguishes between **pediatric‑type** and **adult‑type** tumours and integrates molecular diagnostics. Major families relevant to children include:

| Family / subgroup | Description & key categories |
| --- | --- |
| **Pediatric‑type diffuse low‑grade gliomas** | Comprise four entities: **diffuse astrocytoma, MYB‑ or MYBL1‑altered; angiocentric glioma; polymorphous low‑grade neuroepithelial tumour of the young (PLNTY); and diffuse low‑grade glioma, MAPK pathway‑altered**[[70]](https://atlasgeneticsoncology.org/solid-tumor/209285#:~:text=The%202021%20WHO%20guidelines%20for,altered). These tumours have diffuse growth patterns but often indolent behaviour; integrated diagnosis requires both histopathologic and molecular data[[70]](https://atlasgeneticsoncology.org/solid-tumor/209285#:~:text=The%202021%20WHO%20guidelines%20for,altered). |
| **Pediatric‑type diffuse high‑grade gliomas** | High‑grade gliomas in children are now grouped separately from adult glioblastomas. They include **diffuse midline glioma (H3 K27‑altered), diffuse hemispheric glioma (H3 G34‑mutant), diffuse pediatric‑type high‑grade glioma (H3‑wildtype and IDH‑wildtype), and infant‑type hemispheric glioma**[[71]](https://braintumourresearch.org/blogs/research-campaigning-news/what-are-paediatric-type-diffuse-high-grade-gliomas#:~:text=Paediatric%20high,grade%20gliomas%E2%80%9D%20and%20include). Each entity has distinct molecular drivers and prognosis; for example, diffuse midline gliomas often occur in the pons or thalamus and have <10 % two‑year survival[[72]](https://braintumourresearch.org/blogs/research-campaigning-news/what-are-paediatric-type-diffuse-high-grade-gliomas#:~:text=Diffuse%20midline%20glioma%20,spinal%20cord%2C%20thalamus%20and%20brainstem). |
| **Circumscribed astrocytic gliomas** | Include pilocytic astrocytoma, high‑grade astrocytoma with piloid features, pleomorphic xanthoastrocytoma and subependymal giant cell astrocytoma. |
| **Ependymomas** | Categorised by location (supratentorial, posterior fossa, spinal) and molecular fusions (ZFTA fusion‑positive, YAP1 fusion‑positive, PFA/PFB groups)[[73]](https://pmc.ncbi.nlm.nih.gov/articles/PMC9031600/#:~:text=Supratentorial%20ependymoma%2C%20YAP1%20fusion,26%5D%20evaluation%20in). |
| **Embryonal tumours** | Medulloblastoma (subgroups: WNT‑activated, SHH‑activated TP53‑wildtype, SHH‑activated TP53‑mutant, and non‑WNT/non‑SHH), atypical teratoid/rhabdoid tumour (ATRT) and embryonal tumour with multilayered rosettes (ETMR)[[74]](https://pmc.ncbi.nlm.nih.gov/articles/PMC9031600/#:~:text=Embryonal%20brain%20tumors%20Medulloblastoma%20,82). |

These families correspond to the variable categories one might need to extract from clinical notes.

### 6.2 Diagnostic and treatment workflow

Early recognition and appropriate treatment of brain tumours require a **multidisciplinary care workflow**:

1. **Initial evaluation and imaging.** Any suspicion of a pediatric brain tumour should trigger **sliced imaging** as early as possible. **Magnetic resonance imaging (MRI) is the diagnostic gold standard**[[75]](https://pmc.ncbi.nlm.nih.gov/articles/PMC9031600/#:~:text=pediatrician%20and%2For%20pediatric%20neurologist%2C%20and,In%20the%20case%20of%20eloquent). Computed tomography (CT) may reveal large masses but should be reserved for emergencies because of radiation exposure[[75]](https://pmc.ncbi.nlm.nih.gov/articles/PMC9031600/#:~:text=pediatrician%20and%2For%20pediatric%20neurologist%2C%20and,In%20the%20case%20of%20eloquent). Functional MRI and diffusion studies can delineate tumour type, and MR spectroscopy may aid differentiation[[76]](https://pmc.ncbi.nlm.nih.gov/articles/PMC9031600/#:~:text=neighboring%20regions%2C%20functional%20MRI%20,17). If leptomeningeal spread is suspected (e.g., medulloblastoma), MRI of the entire neuroaxis and cerebrospinal fluid cytology are recommended[[77]](https://pmc.ncbi.nlm.nih.gov/articles/PMC9031600/#:~:text=Some%20of%20the%20tumors%20%28e,Because%20most%20brain%20tumors%20are).
2. **Multidisciplinary team involvement.** Management should involve a pediatrician, pediatric neurologist, neurosurgeon, oncologist, radiation oncologist, neuroradiologist, psychologist and physiotherapist. Early involvement of a neurosurgeon is mandatory if there are signs of raised intracranial pressure (ICP); emergency interventions may include positioning, hyperventilation, steroids, hyperosmolar therapy, external ventricular drain or emergency tumour resection[[78]](https://pmc.ncbi.nlm.nih.gov/articles/PMC9031600/#:~:text=To%20ensure%20an%20optimum%20treatment,is%20described%20in%20the%20following). Treatment decisions are made collaboratively in tumour boards[[79]](https://pmc.ncbi.nlm.nih.gov/articles/PMC9031600/#:~:text=To%20ensure%20an%20optimum%20treatment,is%20described%20in%20the%20following).
3. **Surgery.** Neurosurgeons evaluate whether gross total resection, subtotal resection or biopsy is possible. Surgical timing depends on symptoms and tumour location. Immediate post‑operative MRI within 72 hours assesses resection status[[80]](https://pmc.ncbi.nlm.nih.gov/articles/PMC9031600/#:~:text=Contrast%20MRI%20is%20typically%20performed,always%20be%20discussed%20for%20second). Surgery aims to maximize resection while minimizing neurological deficits; some tumours (e.g., diffuse midline gliomas) are often unresectable.
4. **Adjuvant therapy.** Depending on tumour type, **radiotherapy, chemotherapy or targeted therapy** are administered. For example, medulloblastoma treatment includes craniospinal radiotherapy and multi‑agent chemotherapy[[74]](https://pmc.ncbi.nlm.nih.gov/articles/PMC9031600/#:~:text=Embryonal%20brain%20tumors%20Medulloblastoma%20,82). Pediatric low‑grade gliomas may be observed after complete resection or treated with radiotherapy and targeted inhibitors (BRAF, MEK, MAPK, mTOR) when not resectable[[81]](https://pmc.ncbi.nlm.nih.gov/articles/PMC9031600/). High‑grade gliomas often receive radiotherapy with concurrent chemotherapy (e.g., temozolomide) and may enter clinical trials for targeted agents[[82]](https://pmc.ncbi.nlm.nih.gov/articles/PMC9031600/#:~:text=Tumor%20Type%20Subtype%20Surgery%2FWatch%20and,54%5D%20Circumscribed%20astrocytic%20gliomas).
5. **Supportive care and follow‑up.** Children undergo intensive post‑operative monitoring and rehabilitation. Long‑term follow‑up includes surveillance imaging, neurocognitive assessments, physical therapy and management of treatment‑related sequelae[[83]](https://pmc.ncbi.nlm.nih.gov/articles/PMC9031600/#:~:text=To%20ensure%20an%20optimum%20treatment,is%20described%20in%20the%20following).

These clinical pathways inform which variables should be abstracted (e.g., tumour type, grade, location, treatment modalities, dates of diagnosis and surgery, outcomes, adverse events).

## 7. Designing prompts and variables for pediatric brain tumour abstraction

An **Agent** responsible for generating Brim CSVs should understand how to translate the clinical questions into Brim variables. The following guidelines incorporate Brim’s variable best practices and the clinical context.

### 7.1 General guidelines for variable instructions

1. **Start simple** – Decompose complex questions into single‑concept variables. For example, instead of asking “Does the patient have a high‑grade glioma and has it metastasized?”, create separate variables for tumour grade and metastasis and then use a dependent variable to combine them[[47]](https://docs.brimanalytics.com/article/59-variable-best-practices#:~:text=1).
2. **Define allowed values** – If the variable has a constrained set of responses (e.g., tumour type), list each option and provide definitions. Use WHO categories (see Table above) and include an “Unknown/Not documented” option. This clarifies semantics and reduces hallucinations[[38]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=Option%20definitions).
3. **Specify temporal context** – Clarify whether to capture the initial diagnosis, current status, or most recent value. For example, “Return the first documented histopathologic tumour type” or “Return the most recent imaging modality used for diagnosis (before surgery)”[[36]](https://docs.brimanalytics.com/article/59-variable-best-practices#:~:text=%E2%9C%85%20Temporal%20Context).
4. **Handle insufficient evidence** – Describe what to return if the information is missing. Use default values like “No evidence” or False[[39]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=Default%20value%20for%20empty%20response).
5. **Describe multiple occurrences** – For variables where multiple values could appear (e.g., repeated tumour measurements), instruct whether to use the most recent, largest or earliest value[[84]](https://docs.brimanalytics.com/article/59-variable-best-practices#:~:text=%E2%9C%85%20Multiple%20Values).
6. **Include examples** – Provide snippets of text and expected outputs to illustrate correct labelling[[85]](https://docs.brimanalytics.com/article/59-variable-best-practices#:~:text=%E2%9C%85%20Examples). Examples improve model performance.
7. **Reference other variables when needed** – For derived values (e.g., age at diagnosis), reference input variables like Date of Birth and Diagnosis Date and mention them in the instruction[[43]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=A%20variable%20can%20reference%20the,this%20works%20depends%20on%20scope).
8. **Document restrictions** – If only specific document types or date ranges are relevant (e.g., pathology reports within 30 days of surgery), specify them using Brim’s document restrictions[[42]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=Restrict%20by%20Document%20Name).
9. **Use appropriate scopes** –
10. Many\_per\_note when multiple values may occur within a single note (e.g., metastasis sites).
11. One\_per\_note when each note should yield a single value (e.g., presence of tumour recurrence in that note).
12. One\_per\_patient when aggregating across all notes (e.g., overall tumour type).
13. **Aggregation strategy** – Choose a clear method for summarizing multiple values (e.g., “most severe tumour grade found” or “earliest date of diagnosis”).

### 7.2 Example variables for pediatric brain tumour project

The table below outlines potential variables and dependent variables for a pediatric brain tumour abstraction project. These examples follow Brim’s fields and incorporate the clinical workflow and classification above.

| Variable name (CSV variable\_name) | Type/Scope | Instruction (summary) | Notes |
| --- | --- | --- | --- |
| **patient\_age\_at\_diagnosis** | Integer / one\_per\_patient | “Calculate the patient’s age in years at the time of the first brain tumour diagnosis. Use the Date of Birth variable and the first documented Diagnosis Date variable. If either date is missing, return null.” | Input variables: date\_of\_birth, diagnosis\_date. Use an aggregation instruction: return earliest value. |
| **date\_of\_birth** | Timestamp / one\_per\_patient | “Return the patient’s date of birth as reported in the chart. Provide as YYYY‑MM‑DD. If birth date is not mentioned, return null.” | Should reference only demographic documents. Default value: null. |
| **diagnosis\_date** | Timestamp / one\_per\_patient | “Return the date when the brain tumour was first diagnosed. This is typically the date of the diagnostic MRI or pathology report. Provide as YYYY‑MM‑DD. If multiple dates are mentioned, return the earliest. If no diagnosis is mentioned, return null.” | May need to restrict to notes titled “MRI Report”, “Pathology Report”, “Clinic Note”. |
| **tumour\_type** | Text / one\_per\_patient | “Identify the patient’s primary brain tumour type according to the 2021 WHO classification. Allowed values: Diffuse astrocytoma, MYB/MYBL1‑altered, Angiocentric glioma, Polymorphous low‑grade neuroepithelial tumour of the young (PLNTY), Diffuse low‑grade glioma, MAPK pathway‑altered, Diffuse midline glioma, H3 K27‑altered, Diffuse hemispheric glioma, H3 G34‑mutant, Diffuse pediatric‑type high‑grade glioma (H3‑wildtype/IDH‑wildtype), Infant‑type hemispheric glioma, Pilocytic astrocytoma, Ependymoma, Medulloblastoma, ATRT, ETMR, Other, Unknown. Return the type that best matches the pathology or imaging report. If the note describes multiple tumours, return the most aggressive (highest grade). If no tumour is described, return Unknown.” | Option definitions should map each allowed value to a description. Provide example snippets: e.g., “Immunohistochemistry consistent with diffuse midline glioma (H3 K27M mutation)” → Diffuse midline glioma, H3 K27‑altered. |
| **tumour\_grade** | Integer / one\_per\_patient | “Return the WHO grade (Arabic numerals 1–4) associated with the patient’s primary tumour, based on the integrated diagnosis. If the grade is not specified, return null.” | Use variable type integer. Example: “The tumour is classified as WHO grade 3.” |
| **tumour\_location** | Text / many\_per\_note or one\_per\_patient | “Identify the anatomical location(s) of the primary tumour. Allowed categories: Cerebral hemispheres, Thalamus, Brainstem (pons), Cerebellum, Spinal cord, Ventricular system, Other. If multiple locations are described, return all that apply separated by semicolons.” | Use many\_per\_note if capturing multiple sites within a note; aggregate to one\_per\_patient with union of locations. |
| **surgery\_performed** | Boolean / one\_per\_note | “Indicate whether surgical resection or biopsy was performed in this note. Return True if the note describes any tumour‑directed surgery; otherwise, return False.” | Document type restrictions: notes with titles containing ‘surgery’, ‘operative’, or ‘procedure’. |
| **extent\_of\_resection** | Text / one\_per\_patient | “For patients who underwent tumour resection, indicate the extent: Gross total resection (GTR), Subtotal resection, Biopsy only, Not resected. Base your answer on operative notes or post‑operative imaging reports. If the extent cannot be determined, return Unknown.” | Dependent on surgery\_performed. |
| **radiation\_therapy** | Boolean / one\_per\_patient | “Return True if the patient received radiotherapy as part of treatment; False if explicitly stated that radiation was not given; Unknown if not mentioned.” | Should search notes for radiation planning, intensity‑modulated radiation therapy (IMRT), craniospinal irradiation, etc. |
| **chemotherapy** | Boolean / one\_per\_patient | “Return True if the patient received chemotherapy; False if stated not given; Unknown otherwise.” | Could be refined into specific agents as additional variables (e.g., temozolomide\_received, BRAF\_inhibitor\_used). |
| **targeted\_therapy** | Boolean / one\_per\_patient | “Return True if targeted molecular therapy was administered (e.g., BRAF, MEK, MAPK inhibitors, mTOR inhibitors, TRK inhibitors); Unknown if not mentioned.” | Use option definitions for each drug class. |
| **recurrence** | Boolean / one\_per\_note | “Does this note document tumour recurrence or progression? Return True if it states that the tumour has recurred or progressed, False if it states stability or no recurrence, Unknown if not addressed.” | Use one\_per\_note and aggregate to one\_per\_patient by True if any note shows recurrence. |
| **survival\_status** | Text / one\_per\_patient | “Return the outcome at last follow‑up: Alive with disease, No evidence of disease, Deceased, Unknown. Use notes indicating follow‑up status or death notices.” | Use most recent follow‑up note. |

### 7.3 Example dependent variables

Dependent variables combine several inputs to answer higher‑level questions. Example decisions:

| Dependent variable name | Decision type | Instruction | Input variables |
| --- | --- | --- | --- |
| **high\_grade\_glioma** | Boolean | “Return True if the tumour\_type is any high‑grade glioma (Diffuse midline glioma, Diffuse hemispheric glioma, Diffuse pediatric‑type high‑grade glioma, Infant‑type hemispheric glioma, high‑grade astrocytoma with piloid features, pleomorphic xanthoastrocytoma) or if tumour\_grade ≥ 3. Return False otherwise. If tumour\_type is unknown, return Unknown.” | tumour\_type, tumour\_grade |
| **treatment\_intensity** | Text | “Classify the overall treatment intensity based on the treatments received. Return High if the patient underwent surgery plus both radiotherapy and chemotherapy; Moderate if two modalities were used; Low if only surgery or targeted therapy was used; None if no active treatment is recorded; Unknown if data is insufficient.” | surgery\_performed, radiation\_therapy, chemotherapy, targeted\_therapy |
| **surgical\_candidate** | Boolean | “Return True if the tumour is located in an area amenable to surgery (cerebellum, hemispheres) and not classified as diffuse midline glioma; False otherwise. If tumour\_location or tumour\_type is unknown, return Unknown.” | tumour\_location, tumour\_type |

These dependent variables can be created manually or automatically by Brim. A CSV for the high\_grade\_glioma decision might contain:

decision\_name,instruction,decision\_type,prompt\_template,variables  
high\_grade\_glioma,"Return True if tumour\_type is one of the high-grade glioma categories (Diffuse midline glioma, Diffuse hemispheric glioma, Diffuse pediatric-type high-grade glioma, Infant-type hemispheric glioma, high-grade astrocytoma with piloid features, pleomorphic xanthoastrocytoma) OR tumour\_grade ≥ 3. Return False otherwise. If tumour\_type is unknown, return Unknown.",boolean,,["tumour\_type","tumour\_grade"]

## 8. Workflow for the agent creating Brim CSVs

1. **Understand the clinical domain.** Review the classification of pediatric brain tumours and common treatment pathways (Sections 6.1–6.2). Identify the clinical questions you need to answer.
2. **Define variables.** For each question, decide whether it requires a normal variable or a dependent variable. Specify variable type, scope and detailed instructions following the guidelines in Section 7.1. Include option definitions and examples. Use Brim’s best‑practice checklist to ensure simplicity and completeness[[86]](https://docs.brimanalytics.com/article/59-variable-best-practices#:~:text=1).
3. **Prepare CSVs.** Create one CSV for normal variables with the header shown in Section 2.2 and one for dependent variables. Fill each row using the variables defined. Leave prompt\_template and aggregation\_prompt\_template blank unless you need custom prompts. Ensure instructions reference other variables where appropriate.
4. **Upload notes.** Pre‑process clinical notes to remove identifiers and assign unique NOTE\_ID and PERSON\_ID values. Populate NOTE\_DATETIME, NOTE\_TEXT and NOTE\_TITLE columns. Escape internal quotes and use the correct timestamp format[[87]](https://docs.brimanalytics.com/article/5-how-to-upload-notes#:~:text=Each%20row%20must%20have%20a,order%20to%20be%20successfully%20imported).
5. **Upload variables.** In Brim, navigate to **Project Setup** → **Variables** and upload the prepared CSVs[[88]](https://docs.brimanalytics.com/article/7-how-to-upload-variables-via-csv#:~:text=1,when%20the%20variables%20are%20ready). Review the variable list to ensure fields loaded correctly.
6. **Run a test generation.** Generate labels for one patient to verify variables. Review the LLM reasoning and output; refine instructions or add variables as needed[[13]](https://docs.brimanalytics.com/article/11-label-generation-process#:~:text=Once%20you%27ve%20uploaded%20data%20and,it%27s%20time%20to%20generate%20labels). Use the variable optimizer to improve instructions[[89]](https://docs.brimanalytics.com/article/9-optimizing-variable-instructions#:~:text=Brim%20provides%20a%20Variable%20Instruction,can%20learn%20from%20your%20edits).
7. **Iterate.** When variables perform adequately, expand generation to batches of patients. Continue reviewing, optimizing and refining until the project covers all data.
8. **Export.** After human review, export the labelled dataset for analysis. Validation steps and metrics ensure accuracy[[15]](https://docs.brimanalytics.com/article/29-data-aggregation-in-brim#:~:text=5).

## 9. Conclusion

Brim Analytics provides a flexible framework for large‑scale clinical data abstraction. A clear understanding of the platform’s structure—notes, variables, dependent variables, label generation and review—is essential for configuring projects. Leveraging best practices for variable design and the clinical knowledge of pediatric brain tumours ensures that the extracted data are accurate and clinically meaningful. Following the guidelines above will help agents prepare the required CSV files, define robust variables, and craft high‑quality prompts that guide the LLM to extract the right information from complex clinical notes.

[[1]](https://docs.brimanalytics.com/article/26-creating-a-new-project#:~:text=A%20project%20in%20Brim%20has%3A) [[2]](https://docs.brimanalytics.com/article/26-creating-a-new-project#:~:text=1,Create) Creating a New Project - Brim Analytics Knowledge Base

<https://docs.brimanalytics.com/article/26-creating-a-new-project>

[[3]](https://docs.brimanalytics.com/article/5-how-to-upload-notes#:~:text=Brim%20uses%20a%20%22Comma,sample%20Data%20CSV%20file%20here) [[4]](https://docs.brimanalytics.com/article/5-how-to-upload-notes#:~:text=Each%20row%20must%20have%20a,order%20to%20be%20successfully%20imported) [[5]](https://docs.brimanalytics.com/article/5-how-to-upload-notes#:~:text=Important%20Notes%3A) [[16]](https://docs.brimanalytics.com/article/5-how-to-upload-notes#:~:text=NOTE_DATETIME) [[17]](https://docs.brimanalytics.com/article/5-how-to-upload-notes#:~:text=) [[18]](https://docs.brimanalytics.com/article/5-how-to-upload-notes#:~:text=NOTE_TITLE%20The%20title%20of%20the,ED%20Intake) [[19]](https://docs.brimanalytics.com/article/5-how-to-upload-notes#:~:text=1,the%20status%20in%20the%20table) [[20]](https://docs.brimanalytics.com/article/5-how-to-upload-notes#:~:text=%2A%20Click%20on%20the%20,when%20the%20data%20is%20ready) [[21]](https://docs.brimanalytics.com/article/5-how-to-upload-notes#:~:text=5.%20Preview%20Data%20,Preview%20Data) [[87]](https://docs.brimanalytics.com/article/5-how-to-upload-notes#:~:text=Each%20row%20must%20have%20a,order%20to%20be%20successfully%20imported) How to Upload Notes - Brim Analytics Knowledge Base

<https://docs.brimanalytics.com/article/5-how-to-upload-notes>

[[6]](https://docs.brimanalytics.com/article/67-using-structured-data-in-brim#:~:text=Using%20Structured%20Data%20in%20Brim) [[22]](https://docs.brimanalytics.com/article/67-using-structured-data-in-brim#:~:text=Uploading%20Structured%20Data) Using Structured Data in Brim - Brim Analytics Knowledge Base

<https://docs.brimanalytics.com/article/67-using-structured-data-in-brim>

[[7]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=Fields) [[8]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=Choose%20which%20instrument%C2%A0the%20variable%20belongs,To%20assign%2C%20either) [[33]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=Variable%20type) [[34]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=Scope) [[35]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=Instruction) [[38]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=Option%20definitions) [[39]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=Default%20value%20for%20empty%20response) [[40]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=Reference%20today%27s%20date) [[41]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=Reference%20raw%20text%20from%20notes) [[42]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=Restrict%20by%20Document%20Name) [[43]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=A%20variable%20can%20reference%20the,this%20works%20depends%20on%20scope) [[44]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=Aggregation) [[45]](https://docs.brimanalytics.com/article/6-what-is-a-variable#:~:text=Only%20use%20true%20value%20in,aggregation) What is a variable? - Brim Analytics Knowledge Base

<https://docs.brimanalytics.com/article/6-what-is-a-variable>

[[9]](https://docs.brimanalytics.com/article/23-layered-reasoning-with-dependent-variables#:~:text=Brim%20enables%20layered%20reasoning%20through,a%20concept%20called%20Dependent%20Variables) [[10]](https://docs.brimanalytics.com/article/23-layered-reasoning-with-dependent-variables#:~:text=Default%20value%20for%20empty%20response) [[59]](https://docs.brimanalytics.com/article/23-layered-reasoning-with-dependent-variables#:~:text=Brim%20enables%20layered%20reasoning%20through,a%20concept%20called%20Dependent%20Variables) [[60]](https://docs.brimanalytics.com/article/23-layered-reasoning-with-dependent-variables#:~:text=Variable%20type) [[61]](https://docs.brimanalytics.com/article/23-layered-reasoning-with-dependent-variables#:~:text=Instructions) [[62]](https://docs.brimanalytics.com/article/23-layered-reasoning-with-dependent-variables#:~:text=Variables%2FDependent%20Variables) [[63]](https://docs.brimanalytics.com/article/23-layered-reasoning-with-dependent-variables#:~:text=Option%20definitions) Layered Reasoning with Dependent Variables - Brim Analytics Knowledge Base

<https://docs.brimanalytics.com/article/23-layered-reasoning-with-dependent-variables>

[[11]](https://docs.brimanalytics.com/article/20-automatically-creating-a-dependent-variable#:~:text=Brim%20allows%20you%20to%20automatically,description%2C%20and%20Brim%20automatically%20generates) [[64]](https://docs.brimanalytics.com/article/20-automatically-creating-a-dependent-variable#:~:text=Brim%20allows%20you%20to%20automatically,description%2C%20and%20Brim%20automatically%20generates) Automatically Creating a Dependent Variable - Brim Analytics Knowledge Base

<https://docs.brimanalytics.com/article/20-automatically-creating-a-dependent-variable>

[[12]](https://docs.brimanalytics.com/article/29-data-aggregation-in-brim#:~:text=To%20support%20evidence,variables%20that%20leverage%20the%20process) [[15]](https://docs.brimanalytics.com/article/29-data-aggregation-in-brim#:~:text=5) [[65]](https://docs.brimanalytics.com/article/29-data-aggregation-in-brim#:~:text=Generation%20Step%20What%20happens%20for,a%20variable%20Elements%20Used) [[66]](https://docs.brimanalytics.com/article/29-data-aggregation-in-brim#:~:text=3) [[67]](https://docs.brimanalytics.com/article/29-data-aggregation-in-brim#:~:text=4) Data Aggregation in Brim - Brim Analytics Knowledge Base

<https://docs.brimanalytics.com/article/29-data-aggregation-in-brim>

[[13]](https://docs.brimanalytics.com/article/11-label-generation-process#:~:text=Once%20you%27ve%20uploaded%20data%20and,it%27s%20time%20to%20generate%20labels) Label Generation Process - Brim Analytics Knowledge Base

<https://docs.brimanalytics.com/article/11-label-generation-process>

[[14]](https://docs.brimanalytics.com/article/43-viewing-and-improving-llm-reasoning#:~:text=LLM%20reasoning%20is%20represented%20by,with%20the%20generated%20label%20value) Viewing and Improving LLM Reasoning - Brim Analytics Knowledge Base

<https://docs.brimanalytics.com/article/43-viewing-and-improving-llm-reasoning>

[[23]](https://docs.brimanalytics.com/article/7-how-to-upload-variables-via-csv#:~:text=CSV%20Format%20for%20Variables) [[24]](https://docs.brimanalytics.com/article/7-how-to-upload-variables-via-csv#:~:text=Notes%3A%20Formatting%20Options%3A%20The%20following,Variable%20Type) [[25]](https://docs.brimanalytics.com/article/7-how-to-upload-variables-via-csv#:~:text=Aggregation%20Instruction%3A%20Instructions%20to%20aggregate,values%20for%20ONE_PER_PATIENT%20and%20ONE_PER_NOTE) [[26]](https://docs.brimanalytics.com/article/7-how-to-upload-variables-via-csv#:~:text=Variable%20Type%3A%20Type%20of%20data,Options%3A%20boolean%2C%20text%2C%20integer%2C%20float) [[27]](https://docs.brimanalytics.com/article/7-how-to-upload-variables-via-csv#:~:text=Scope%3A%20Granularity%20to%20extract%20data,from%20all%20notes) [[28]](https://docs.brimanalytics.com/article/7-how-to-upload-variables-via-csv#:~:text=CSV%20Format%20for%20Dependent%20Variables) [[29]](https://docs.brimanalytics.com/article/7-how-to-upload-variables-via-csv#:~:text=Prompt%20Template%3A%20Prompt%20to%20use,to%20query%20the%20LLM) [[30]](https://docs.brimanalytics.com/article/7-how-to-upload-variables-via-csv#:~:text=1,to%20a%20Sample%20CSV%20file) [[31]](https://docs.brimanalytics.com/article/7-how-to-upload-variables-via-csv#:~:text=fields%20in%20each%20type%20of,when%20the%20variables%20are%20ready) [[32]](https://docs.brimanalytics.com/article/7-how-to-upload-variables-via-csv#:~:text=,tab) [[88]](https://docs.brimanalytics.com/article/7-how-to-upload-variables-via-csv#:~:text=1,when%20the%20variables%20are%20ready) How to Upload Variables via CSV - Brim Analytics Knowledge Base

<https://docs.brimanalytics.com/article/7-how-to-upload-variables-via-csv>

[[36]](https://docs.brimanalytics.com/article/59-variable-best-practices#:~:text=%E2%9C%85%20Temporal%20Context) [[37]](https://docs.brimanalytics.com/article/59-variable-best-practices#:~:text=%E2%9C%85%20Examples) [[46]](https://docs.brimanalytics.com/article/59-variable-best-practices#:~:text=There%20are%204%20overall%20categories%3A) [[47]](https://docs.brimanalytics.com/article/59-variable-best-practices#:~:text=1) [[48]](https://docs.brimanalytics.com/article/59-variable-best-practices#:~:text=%E2%9C%85%20Limited%20Categories%20) [[49]](https://docs.brimanalytics.com/article/59-variable-best-practices#:~:text=%E2%9C%85%20Insufficient%20Evidence) [[50]](https://docs.brimanalytics.com/article/59-variable-best-practices#:~:text=%E2%9C%85%20Expected%20Format) [[51]](https://docs.brimanalytics.com/article/59-variable-best-practices#:~:text=3%29%20References%20) [[52]](https://docs.brimanalytics.com/article/59-variable-best-practices#:~:text=%E2%9C%85%20Consistency) [[53]](https://docs.brimanalytics.com/article/59-variable-best-practices#:~:text=%E2%9C%85%20Optimization) [[84]](https://docs.brimanalytics.com/article/59-variable-best-practices#:~:text=%E2%9C%85%20Multiple%20Values) [[85]](https://docs.brimanalytics.com/article/59-variable-best-practices#:~:text=%E2%9C%85%20Examples) [[86]](https://docs.brimanalytics.com/article/59-variable-best-practices#:~:text=1) Variable Best Practices - Brim Analytics Knowledge Base

<https://docs.brimanalytics.com/article/59-variable-best-practices>

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