

# Package ‘tdcmStan’

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**Type** Package

**Title** Automating the Creation of Stan Code for TDCMs

**Version** 3.0.0

**Description** A collection of functions for automatically creating 'Stan' code for transition diagnostic classification models (TDCMs) as they are defined by Madison and Bradshaw (2018) <[DOI:10.1007/s11336-018-9638-5](https://doi.org/10.1007/s11336-018-9638-5)>. This package supports automating the creation of 'Stan' code for TDCMs, fungible TDCMs (i.e., TDCMs with item parameters constrained to be equal across all items), and multi-threaded TDCMs.

**License** GPL (>= 2)

**Imports** dplyr (>= 1.0.7), glue (>= 1.4.2), magrittr (>= 2.0.1), parallel (>= 4.1.0), rlang (>= 0.4.11), stringr (>= 1.4.0), tibble (>= 3.1.5), tidyr (>= 1.1.4), tidyselect (>= 1.1.2)

**Suggests** readr (>= 2.0.0), testthat (>= 3.0.4)

**Depends** R (>= 3.5.0)

**Encoding** UTF-8

**RoxygenNote** 7.2.3

**URL** <https://github.com/atlas-aai/tdcmStan>

**BugReports** <https://github.com/atlas-aai/tdcmStan/issues>

**NeedsCompilation** no

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**Repository** CRAN

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bin_profile	<i>Creating a Class by Attribute Matrix</i>
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### Description

Automating the creation of Class by Attribute Matrix

### Usage

```
bin_profile(natt)
```

### Arguments

natt	An integer containing the number of assessed attributes.
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### Value

‘profiles’ A tibble containing a class by attribute matrix listing which attributes are mastered by each latent class.

### Examples

```
bin_profile(natt = 3)
```

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create_fng_no_common_items_stan_tdcn	<i>Creating Fungible TDCM with No Common Items Stan Code</i>
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### Description

Automating the creation of fungible Stan code for a TDCM when there are no common items.

### Usage

```
create_fng_no_common_items_stan_tdcn(q_matrix)
```

### Arguments

q\_matrix      A tibble containing the assessment Q-matrix.

### Value

'stan\_code' A list containing the text for the Stan code blocks.

### Examples

```
qmatrix = tibble::tibble(att_1 = c(1, 0, 1, 0, 1, 1), att_2 = c(0, 1, 0, 1, 1, 1))
create_fng_no_common_items_stan_tdcn(q_matrix = qmatrix)
```

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create\_fng\_stan\_tdcn    *Creating Fungible TDCM Stan Code*

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### Description

Automating the creation of fungible Stan code for a TDCM.

### Usage

```
create_fng_stan_tdcn(q_matrix)
```

### Arguments

q\_matrix      A tibble containing the assessment Q-matrix.

### Value

'stan\_code' A list containing the text for the Stan code blocks.

### Examples

```
qmatrix = tibble::tibble(att_1 = c(1, 0, 1, 0, 1, 1), att_2 = c(0, 1, 0, 1, 1, 1))
create_fng_stan_tdcn(q_matrix = qmatrix)
```

---

create\_stan\_tdcn      *Creating TDCM Stan Code*

---

**Description**

Automating the creation of Stan code for a TDCM.

**Usage**

```
create_stan_tdcn(q_matrix)
```

**Arguments**

q\_matrix      A tibble containing the assessment Q-matrix.

**Value**

‘stan\_code‘ A list containing the text for the Stan code blocks.

**Examples**

```
qmatrix = tibble::tibble(att_1 = c(1, 0, 1, 0, 1, 1), att_2 = c(0, 1, 0, 1, 1, 1))
create_stan_tdcn(q_matrix = qmatrix)
```

---

create\_threaded\_stan\_tdcn      *Creating Multi-Threaded TDCM Stan Code*

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**Description**

Automating the creation of multi-threaded Stan code for a TDCM.

**Usage**

```
create_threaded_stan_tdcn(q_matrix)
```

**Arguments**

q\_matrix      A tibble containing the assessment Q-matrix.

**Value**

‘stan\_code‘ A list containing the text for the Stan code blocks.

**Examples**

```
qmatrix = tibble::tibble(att_1 = c(1, 0, 1, 0, 1, 1), att_2 = c(0, 1, 0, 1, 1, 1))
create_threaded_stan_tdcn(q_matrix = qmatrix)
```

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shard_calculator	<i>Calculate the Number of Shards and Simultaneous Chains</i>
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**Description**

Calculating the number of shards and simultaneous chains.

**Usage**

```
shard_calculator(num_respondents, num_responses, num_chains)
```

**Arguments**

num_respondents	An integer specifying the number of respondents.
num_responses	An integer specifying the number of responses.
num_chains	An integer specifying the number of chains that need to be run.

**Value**

'ret' A list containing the number of shards to use within each chain and the number of chains to run in parallel.

**Examples**

```
shard_calculator(num_respondents = 1000, num_responses = 5000, num_chains = 4)
```

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