

# Ethereum Data Locations

## Storage

Persistent (on-chain)

Expensive to write

~20,000 gas per slot

State variables

Key-value store

## Memory

Temporary (per call)

Cheaper than storage

~3 gas per word

Function variables

Linear byte array

## Calldata

Read-only input

Cheapest option

~3 gas per byte

Function arguments

Immutable

## Gas Cost Comparison (approximate)

Storage write (new):

**~20,000 gas**

Storage write (update):

**~5,000 gas**

Memory expansion:

**~3 gas/word**

Calldata read:

**~3 gas/byte**

*Best Practice: Use calldata for read-only, memory for temp, storage only when needed*