File Edit Selection View Go Run Terminal Help

WEEK 24

EXPLORER

WEEK ...

- .dist
- Project 14 - Health In...
  - .dist
  - Git readme
  - insurance_function
  - Health Insurance Co...
  - health-insurance.jpg
  - insurance.csv
  - model.pkl
- Project 14 - Health In...

OUTLINE

TIMELINE

Health Insurance Cost Prediction.ipynb

Project 14 - Health Insurance Prediction on GCP > Health Insurance Cost Prediction.ipynb

+ Code + Markdown | Run All | Clear All Outputs | Outline ...

Python 3.12.5

Health Insurance Cost Prediction

Importing Dependencies

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
from sklearn import metrics
```

[62] Python

Data Collection & Analysis

```
# loading data from csv file to Pandas Dataframe
insurance_dataset = pd.read_csv('insurance.csv')
```

[63] Python

```
#first 10 rows of dataframe
insurance_dataset.head(10)
```

[64] Python

	age	sex	bmi	children	smoker	region	charges
0	19	female	27.900	0	yes	southwest	16884.92400

⊗ 0 ⚠ 0

Cell 1 of 80 Go Live

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Health Insurance Cost Prediction.ipynb

Project 14 - Health Insurance Prediction on GCP > Health Insurance Cost Prediction.ipynb > ...

+ Code + Markdown | Run All | Clear All Outputs | Outline ...

Python 3.12.5

1337 rows × 7 columns

```python
input_data = {
    'bmi': [27.900],
    'children': [0],
    'smoker': [1],
    'age_category': [0],
    'sex_female': [1],
    'sex_male': [0]
}
input_data = pd.DataFrame(input_data)

prediction = model.predict(input_data)

print('Insurance cost is USD', prediction[0])
```

[120] Python

```
Insurance cost is USD 294202.7388164547
```

Saving the Model using Pickle

```python
import pickle

with open('model.pkl','wb') as f:
    pickle.dump(model,f)
```

[121] Python

0 ⚠ 12

Cell 1 of 80 Go Live

Cloud Storage

Overview
Buckets
Monitoring
Settings

Marketplace
Release Notes

Bucket details

GO TO PATH | REFRESH | LEARN

insurance-model-free

Location	Storage class	Public access	Protection
us-central1 (Iowa)	Standard	Subject to object ACLs	Soft Delete

OBJECTS | CONFIGURATION | PERMISSIONS | PROTECTION | LIFECYCLE | OBSERVABILITY | INVENTORY REPORTS | OPERATIONS

Folder browser

insurance-model-free

Buckets > insurance-model-free

CREATE FOLDER | UPLOAD | TRANSFER DATA | OTHER SERVICES

Filter by name prefix only | Filter | Filter objects and folders | Show Live objects only

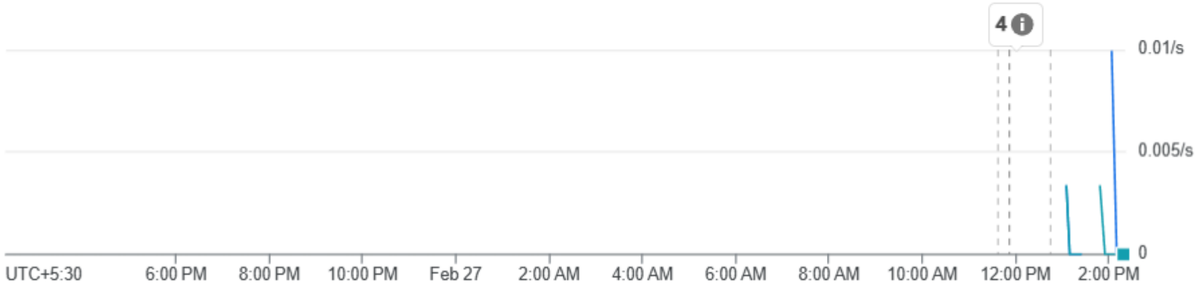
Name	Size	Type	Created	Storage class
model.pkl	718 B	application/octet-stream	Feb 25, 2025, 1:54:03 PM	Standard

predict-insurance-manual Region: us-central1 URL: https://predict-insurance-manual-802307286530.us-central1.run.app Scaling: Auto (Min: 0)

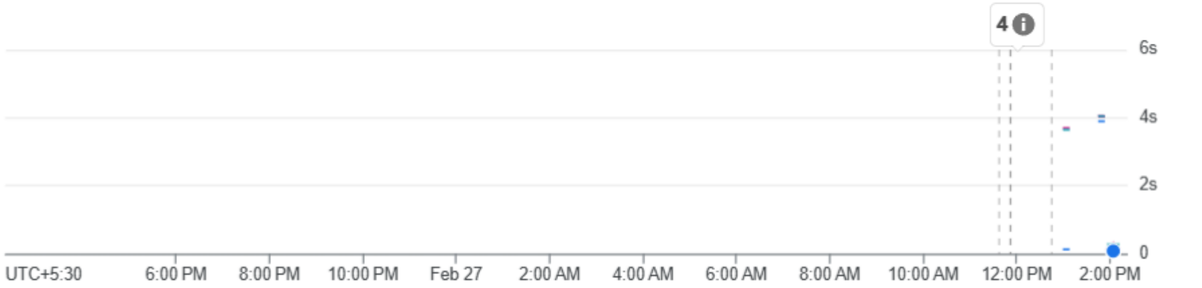
Predefined | CREATE UPTIME CHECK | Annotations (2) | Last 1 day

Occurrences	Count	Error	Users	First seen	Last seen	Status
	3	MissingTargetException: File /workspace/main.py is expected to contain a function named 'hello_http'. Found: 'predict_insurance' instead .get_user_function (/layers/google.python.pip/pip/lib/python3.9/site-packages/functions_framework/_function_registry.py:53)	0	2 hours ago	2 hours ago	-

Request count



Request latencies



Container instance count

Billable container instance time

predict-insurance Region: us-central1 URL: https://us-central1-insurance-prediction-free.cloudfunctions.net/predict_insurance Scaling: Auto (Min: 0)

Source Base image: Python 3.9 (Ubuntu 18 Full) Function entry point: `predict_insurance` Edit source Show payload

- main.py
- requirements.txt
- test.py

Download ZIP

```python
import functions_framework
import pickle
from google.cloud import storage
import pandas as pd

@functions_framework.http
def predict_insurance(request):
    try:
        storage_client = storage.Client()
        bucket = storage_client.bucket("insurance-model-free")
        blob = bucket.blob("model.pkl")
        blob.download_to_filename("/tmp/model.pkl")
        with open("/tmp/model.pkl", "rb") as f:
            model = pickle.load(f)
    except Exception as e:
        return {"error": f"Failed to load model: {str(e)}"}, 500

    request_json = request.get_json()
    bmi = request_json["bmi"]
    children = request_json["children"]
    smoker = request_json["smoker"]
    age_category = request_json["age_category"]
    sex_female = request_json["sex_female"]
    sex_male = request_json["sex_male"]

    input_data = pd.DataFrame(
        [[bmi, children, smoker, age_category, sex_female, sex_male]],
        columns=["bmi", "children", "smoker", "age_category", "sex_female", "sex_male"]
    )
    charges = model.predict(input_data)[0]
    return {"predicted_charges": float(charges)}
```

predict-insurance Region: us-central1 URL: https://us-central1-insurance-prediction-free.cloudfunctions.net/predict_insurance **Scaling: Auto** (Min: 0)

Source Base image: Python 3.9 (Ubuntu 18 Full) Function entry point: `predict_insurance` Edit source Show payload

- main.py
- requirements.txt
- test.py

Download ZIP

```
1  functions-framework==3.*
2  google-cloud-storage==2.10.0
3  scikit-learn==0.24.2
4  numpy==1.19.5
5  pandas==1.1.5
```

Google Cloud | insurance-prediction-free | Search (/) for resources, docs, products, and more | Search

Cloud Run | Service details | Edit & deploy new revision | Set up Continuous Deployment | Test | Learn

predict-insurance | Region: us-central1 | URL: https://us-central1-insurance-prediction-free.cloudfunctions.net/predict_insurance | Scaling: Auto (Min: 0)

Metrics | SLOs | Logs | Revisions | Source | Triggers | Networking | Security | YAML

Source | Base image: Python 3.9 (Ubuntu 18 Full) | Function entry point: `predict_insurance` | Edit source | Show payload

- main.py
- requirements.txt
- test.py

```
1  import requests
2  url = "https://us-central1-insurance-prediction-free.cloudfunctions.net/predict_insurance"
3  response = requests.get(url)
4  print(response.json())
```

Download ZIP

Google Cloud | insurance-prediction-free | Search (/) for resources, docs, products, and more

Cloud Run | Service details | EDIT & DEPLOY NEW REVISION | SET UP CONTINUOUS DEPLOYMENT | TES

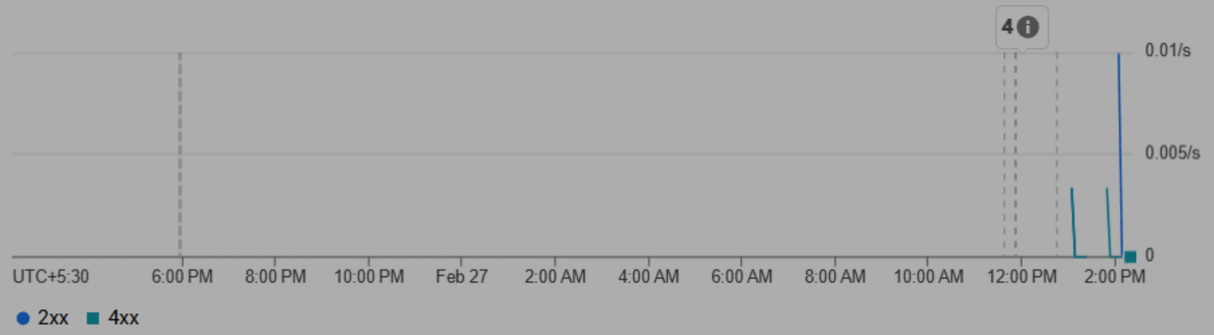
predict-insurance-manual | Region: us-central1 | URL: https://predict-insurance-manual-802307286530.us-central1.run.app

METRICS | SLOS | LOGS | REVISIONS | SOURCE | TRIGGERS | NETWORKING | SECURITY | YAML

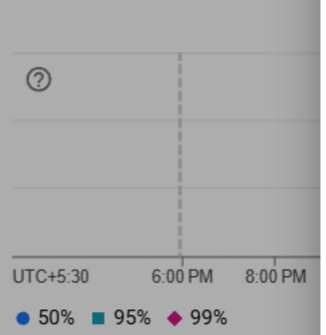
Predefined | + CREATE UPTIME CHECK

Occurrences	Count	Error
	3	MissingTargetException: File /workspace/main.py is expected to contain a function named 'hello_http'. Found: 'predict_insura .get_user_function (/layers/google.python.pip/pip/lib/python3.9/site-packages/functions_framework/_function_registry.py:5

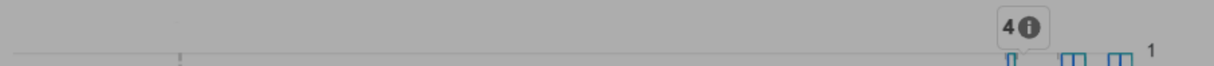
Request count



Request latencies



Container instance count



Billable container instance t

Test service

Configure triggering event

Press Alt+F1 for Accessibility Options.

```
{
    "bmi": 27.5,
    "children": 2,
    "smoker": 0,
    "age_category": 1,
    "sex_female": 0,
    "sex_male": 1
}
```

Query parameters

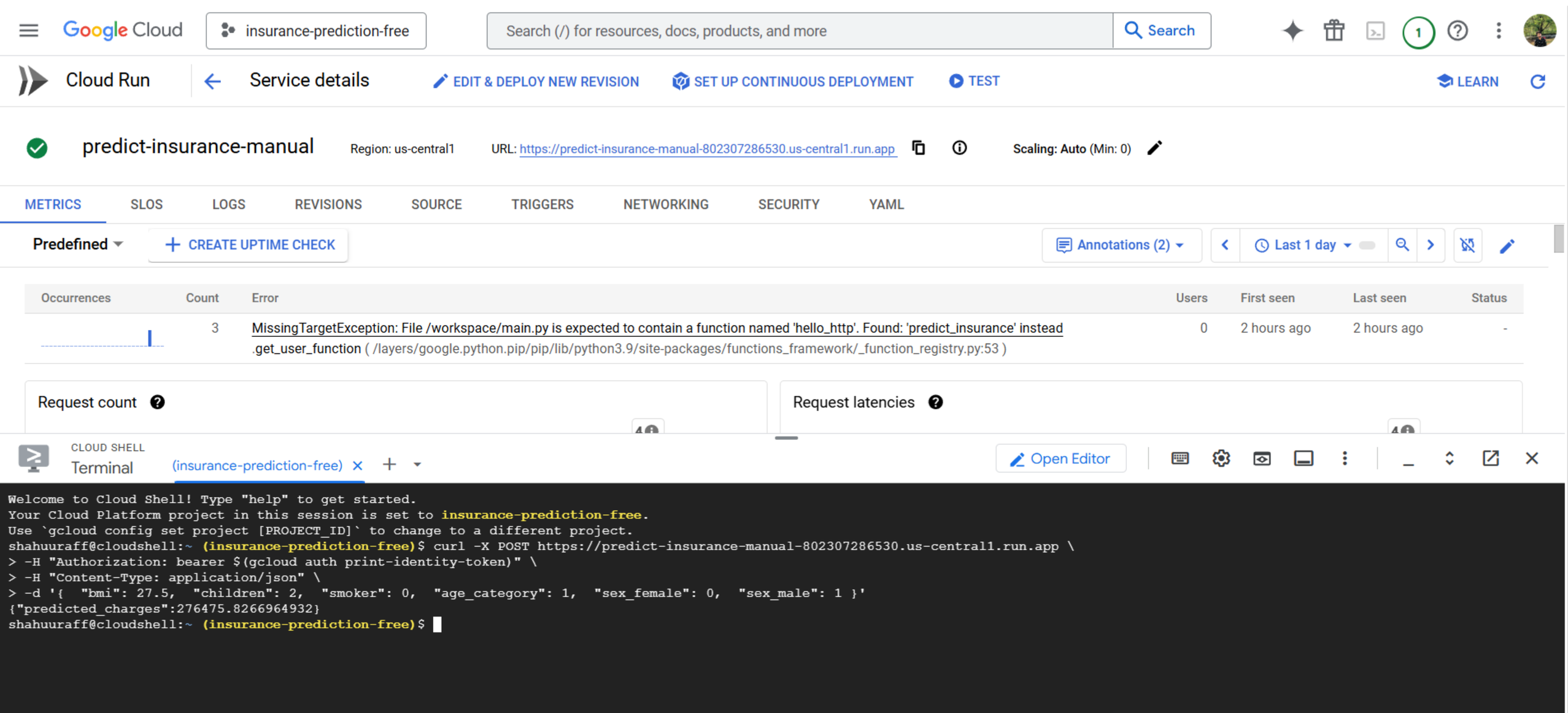
+ ADD QUERY PARAMETER

Headers

+ ADD HEADER

CLI test command

TEST IN CLOUD SHELL | CLOSE


Google Cloud
insurance-prediction-free
Search (/) for resources, docs, products, and more
Search
Cloud Run
Service details
EDIT & DEPLOY NEW REVISION
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predict-insurance-manual
Region: us-central1
URL: https://predict-insurance-manual-802307286530.us-central1.run.app
Scaling: Auto (Min: 0)
METRICS
SLOS
LOGS
REVISIONS
SOURCE
TRIGGERS
NETWORKING
SECURITY
YAML
Predefined
CREATE UPTIME CHECK
Annotations (2)
Last 1 day
Occurrences
Count
Error
Users
First seen
Last seen
Status
3
MissingTargetException: File /workspace/main.py is expected to contain a function named 'hello_http'. Found: 'predict_insurance' instead
.get_user_function (/layers/google.python.pip/pip/lib/python3.9/site-packages/functions_framework/_function_registry.py:53)
0
2 hours ago
2 hours ago
-
Request count
Request latencies
CLOUD SHELL
Terminal
(insurance-prediction-free)
Open Editor
Welcome to Cloud Shell! Type "help" to get started.
Your Cloud Platform project in this session is set to insurance-prediction-free.
Use `gcloud config set project [PROJECT_ID]` to change to a different project.
shahuuraff@cloudshell:~ (insurance-prediction-free)$ curl -X POST https://predict-insurance-manual-802307286530.us-central1.run.app \
> -H "Authorization: bearer $(gcloud auth print-identity-token)" \
> -H "Content-Type: application/json" \
> -d '{ "bmi": 27.5, "children": 2, "smoker": 0, "age_category": 1, "sex_female": 0, "sex_male": 1 }'
{"predicted_charges":276475.8266964932}
shahuuraff@cloudshell:~ (insurance-prediction-free)$