

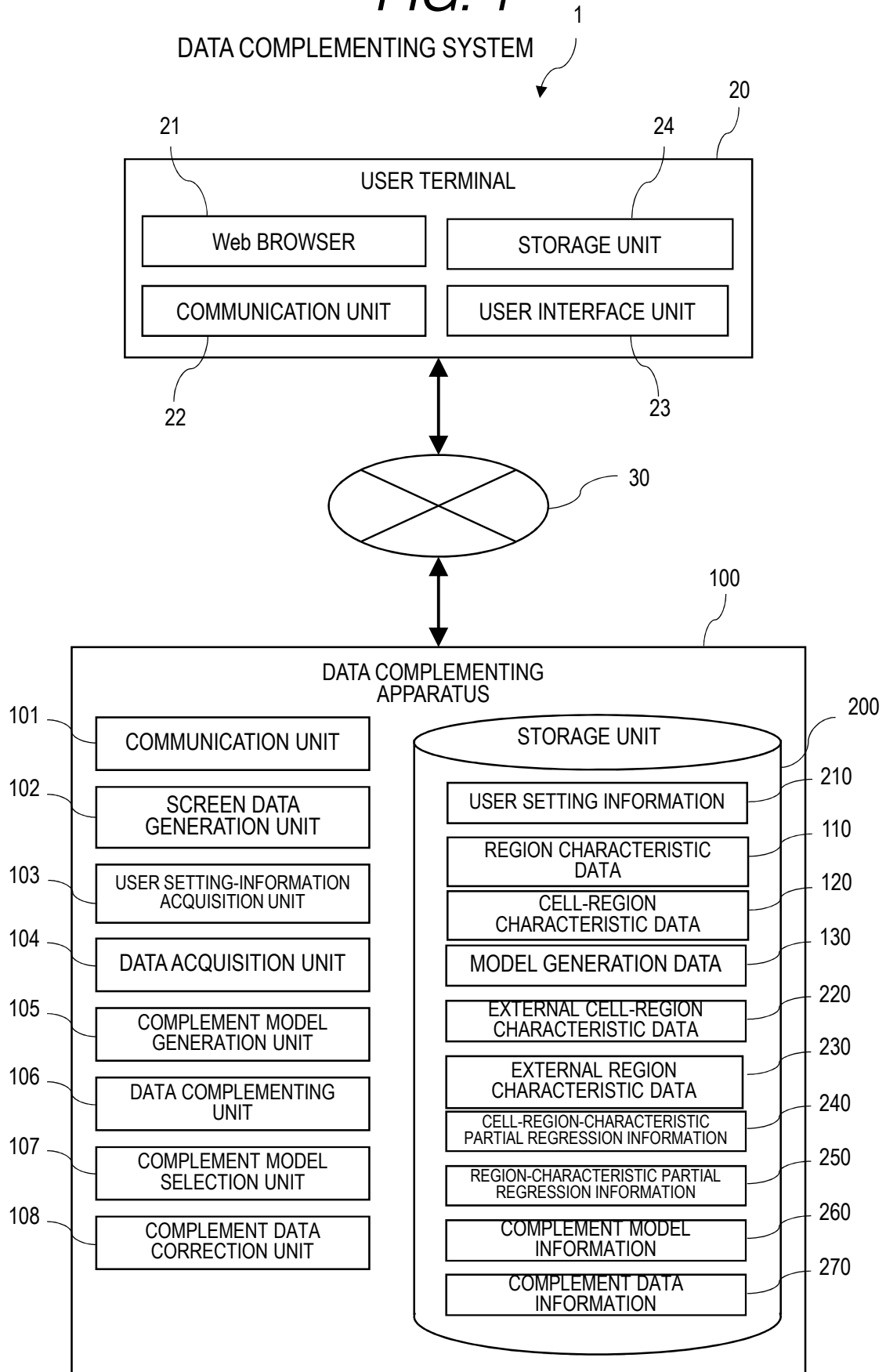
FIG. 1

FIG. 2A

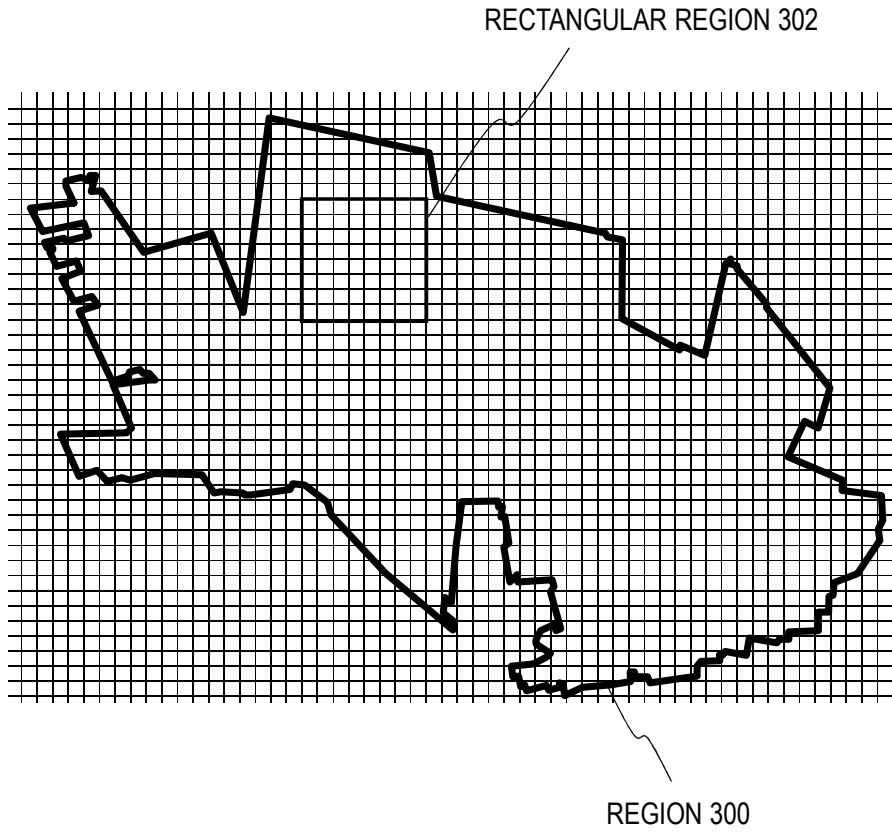


FIG. 2B

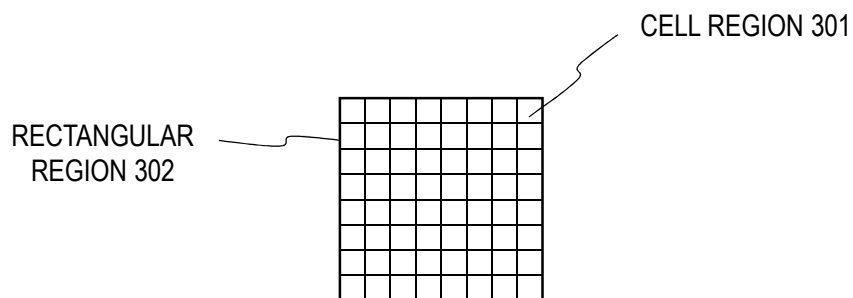


FIG. 3A

110

REGION CHARACTERISTIC DATA

REGION	AREA [km ²]	POPULATION [persons]	AGE POPULATION UNDER 15 [persons]	AGE POPULATION OVER 65 [persons]	NUMBER OF OWNED VEHICLES [pieces]	...
U	11.46	125,223	16,189	27,334	37,283	...

FIG. 3B

120

CELL-REGION CHARACTERISTIC DATA

CELL REGION	MESH SIZE (LENGTH OF ONE SIDE) [m]	POPULATION [persons]	AGE POPULATION UNDER 15 [persons]	AGE POPULATION OVER 65 [persons]	...
U-001	500	2,100	210	630	...
U-002	500	2,125	200	611	...
U-003	500	2,074	190	610	...
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.

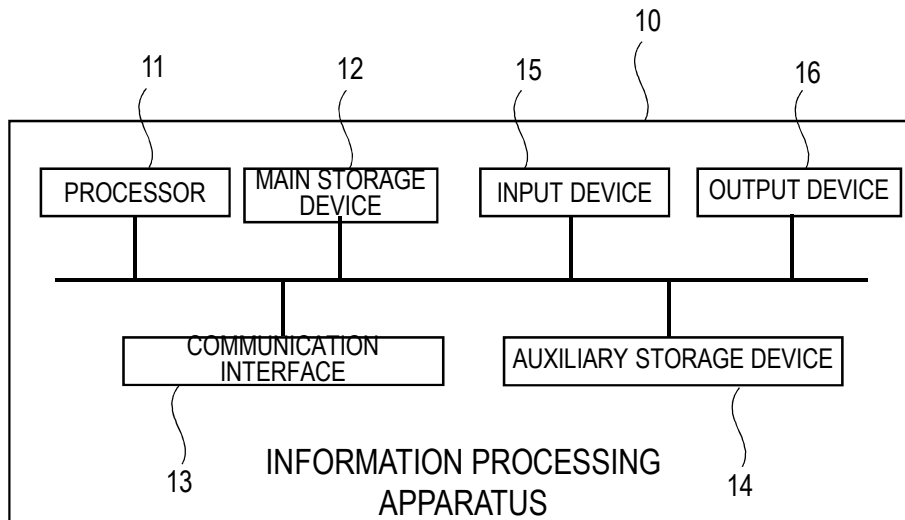
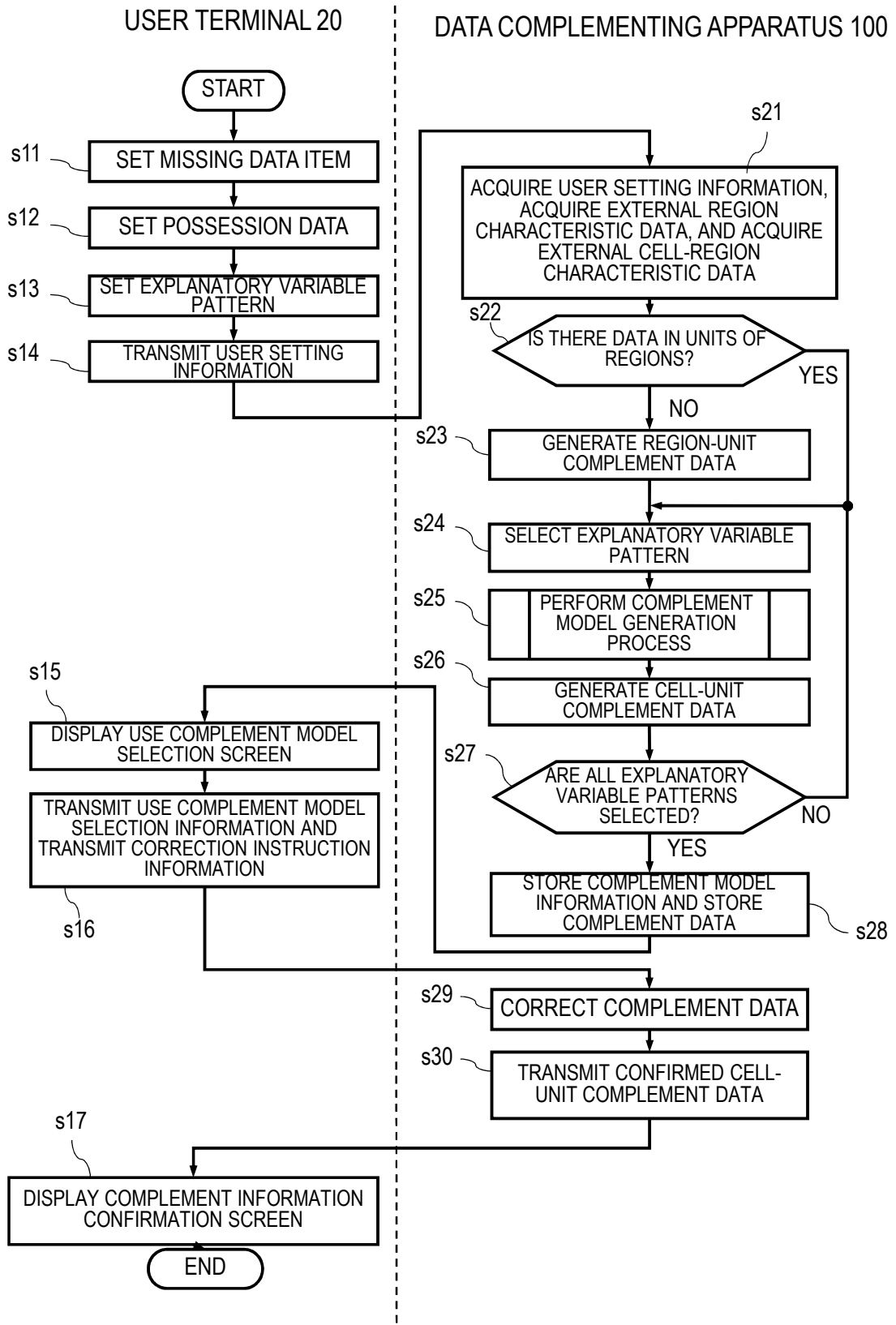
FIG. 4

FIG. 5COMPLEMENT DATA GENERATION PROCESS ^{s5}

6/18
FIG. 6

40

USER INFORMATION SETTING SCREEN

1. WHAT IS DATA ITEM DESIRED TO BE COMPLEMENTED? 41

NUMBER OF OWNED VEHICLES

2. PLEASE INPUT DATA YOU HAVE

CELL UNIT: 42

u-cell.csv

SIZE OF CELL: 43

500 m square

REGION UNIT: 44

u-area.csv

3. PLEASE SET SIGNIFICANCE LEVEL WHEN GENERATING MODEL

SIGNIFICANCE LEVEL: 45

5 %

46

REGISTER

7/18
FIG. 7

50

EXPLANATORY VARIABLE SETTING SCREEN

4. PLEASE SELECT EXPLANATORY VARIABLE FOR GENERATING
COMPLEMENT MODEL

PATTERN NUMBER:

53

☒ POPULATION

53

☐ AGE POPULATION UNDER 15

☐ AGE POPULATION OVER 65

☒ DISTANCE TO NEAREST STATION

54

NEXT

55

END PATTERN REGISTRATION

8/18
FIG. 8

60

REGION-UNIT DATA CHECK SCREEN

5. PLEASE CHECK DATA ITEM YOU HAVE IN UNITS OF REGIONS

61

62

REGION AREA

☒ NUMBER OF OWNED VEHICLES

NUMBER OF COMPLEX COMMERCIAL FACILITIES

ROAD AREA

NUMBER OF FRESH FOOD STORES

6. DO YOU HAVE DATA DESIRED TO BE COMPLEMENTED IN UNITS OF REGIONS?

63

☒ YES

☐ NO

64 CONFIRM

The figure shows a user interface for checking data items in units of regions. It features a title bar, a list of data items with radio buttons for selection, and a confirmation section with a 'CONFIRM' button. Reference numerals 60 through 64 point to various elements of the interface.

FIG. 10

COMPLEMENT MODEL CONSTRUCTION PROCESS s25

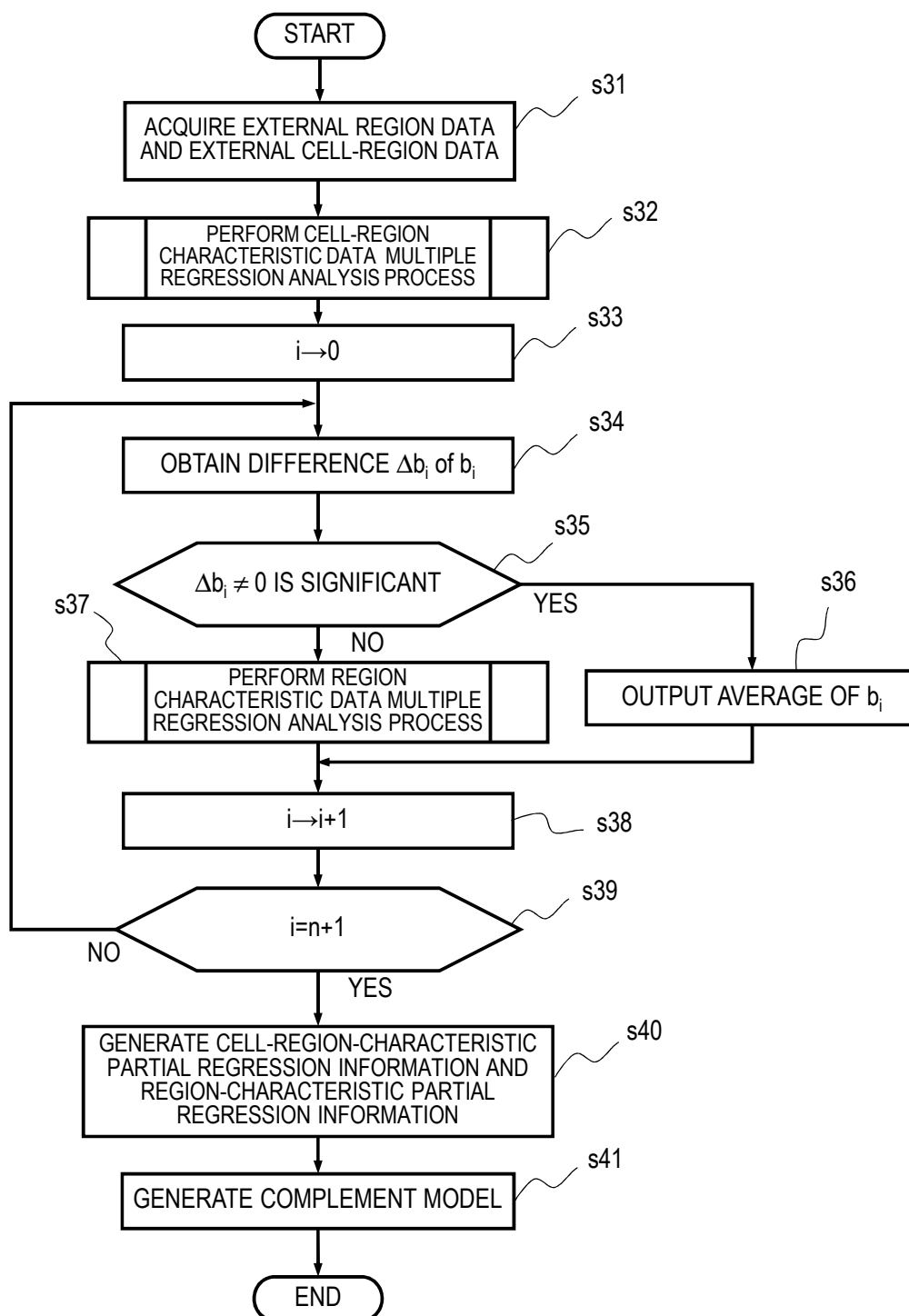


FIG. 11A

220

EXTERNAL CELL-REGION CHARACTERISTIC DATA

EXTERNAL CELL-REGION	CELL SIZE ONE SIDE OF CELL [m]	EXPLANATORY VARIABLE PATTERN	NUMBER OF OWNED VEHICLES [pieces]	POPULATION [persons]	AGE POPULATION UNDER 15 [persons]	AGE POPULATION OVER 65 [persons]	...
A-001	500	p-02	560	3100	310	890	...
A-002	500	p-02	589	3215	320	875	...
A-003	500	p-02	572	3121	306	872	...
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.

FIG. 11B

230

EXTERNAL REGION CHARACTERISTIC DATA

EXTERNAL REGION	NUMBER OF OWNED VEHICLES [pieces]	AREA [km ²]	NUMBER OF COMPLEX COMMERCIAL FACILITIES [pieces]	...
A	74,472	32.1	13	...
B	28,412	14.2	3	...
C	66,910	22.3	6	...
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.

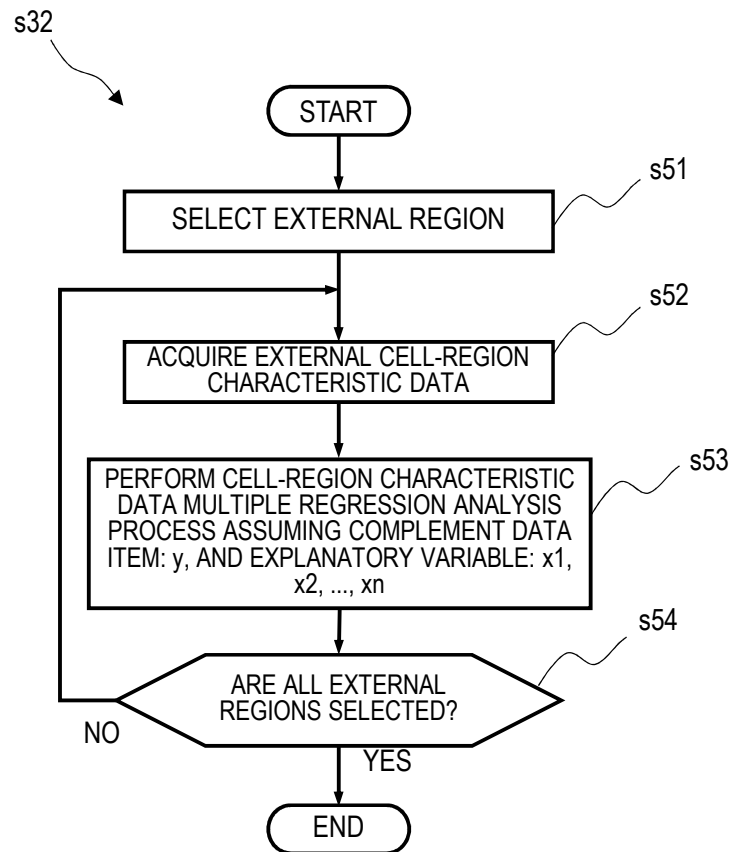
FIG. 12CELL-REGION CHARACTERISTIC DATA
MULTIPLE REGRESSION ANALYSIS PROCESS

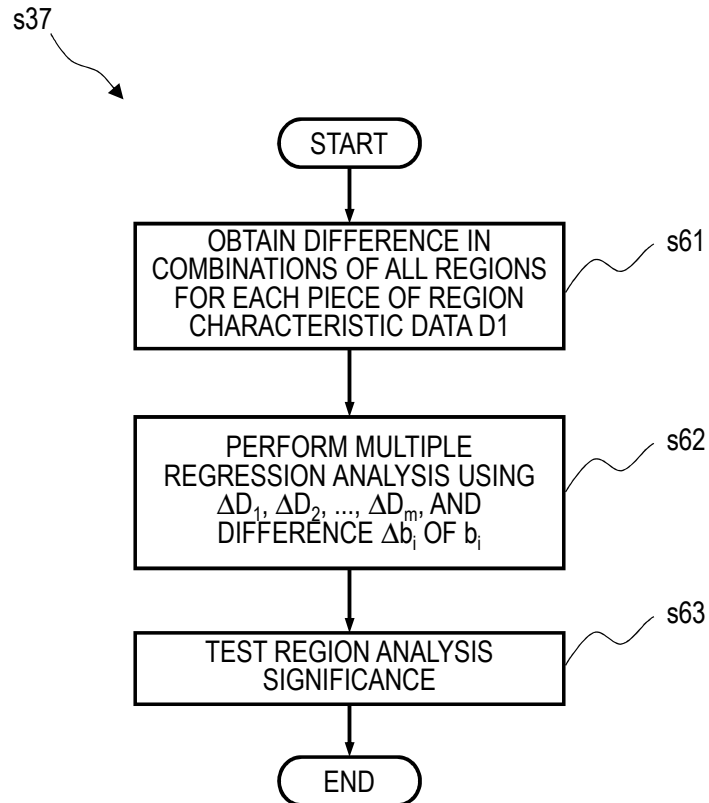
FIG. 13REGION CHARACTERISTIC DATA MULTIPLE REGRESSION
ANALYSIS PROCESS

FIG. 14ACELL-REGION CHARACTERISTIC PARTIAL
REGRESSION INFORMATION

240

REGION	SIGNIFI- CANCE	b_0	b_1	b_2	b_3	...
A	×	2.15	3.22	2.64	16.22	...
B	○	2.56	3.19	1.27	10.15	...
C	○	1.97	3.25	6.24	18.29	...
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.

FIG. 14BCELL-REGION CHARACTERISTIC PARTIAL
REGRESSION INFORMATION

250

CELL-REGION CHARAC- TERISTIC PARTIAL REGRESSION COEFFICIENT	AVERAGE	SIGNIFI- CANCE	REGION-CHARACTERISTIC PARTIAL REGRESSION COEFFICIENT		
			g_1	g_2	
b_0	-	×	2.15	3.22	...
b_1	-	○	2.56	3.19	...
b_2	-	○	1.97	3.25	...
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.

FIG. 15

70

71

USE COMPLEMENT MODEL SELECTION SCREEN

DATA ITEM TO BE COMPLEMENTED: NUMBER OF OWNED VEHICLES 72

RECOMMENDED USE COMPLEMENT MODEL INFORMATION: 73

EXPLANATORY VARIABLE USED IN GENERATION OF MODEL:

- AGE POPULATION UNDER 15
- AGE POPULATION OVER 65
- DISTANCE TO NEAREST STATION

REGION-UNIT CONVERSION VALUE: 65,461 74

DEVIATION: 3.7 % 75

EXPLANATORY VARIABLE PATTERN AND SIGNIFICANCE RATIO

PATTERN NO.	EXPLANATORY VARIABLE	SIGNIFICANCE RATIO	
		CELL ANALYSIS	REGION ANALYSIS
P01	POPULATION, DISTANCE TO NEAREST STATION	25 %	30 %
p02	AGE POPULATION (UNDER 15), AGE POPULATION (OVER 65)	80 %	75 %
p03	AGE POPULATION (UNDER 15), AGE POPULATION (OVER 65), DISTANCE TO NEAREST STATION	93 %	95 %
⋮	⋮	⋮	⋮

76

PLEASE INPUT USE MODEL No.: No. 03 77

WHEN YOU HAVE ACTUAL VALUE IN UNITS OF REGIONS

DO YOU FURTHER CORRECT COMPLEMENT DATA? 78

☒ YES ☐ NO 79

PROCEED TO NEXT

16/18
FIG. 16

80

81

82

83

84

85

COMPLEMENT INFORMATION
CONFIRMATION SCREEN

COMPLEMENTED DATA ITEM: NUMBER OF OWNED VEHICLES

COMPLEMENTED DATA VALUE IS AS FOLLOWS:

CELL ID	NUMBER OF OWNED VEHICLES [pieces]
U-001	757
U-002	765
U-003	752
· · ·	· · ·

USE COMPLEMENT MODEL INFORMATION IS AS FOLLOWS

EXPLANATORY VARIABLE USED IN GENERATION OF MODEL:

- AGE POPULATION UNDER 15
- AGE POPULATION OVER 65
- DISTANCE TO NEAREST STATION
- ...

REASON OF SELECTING THIS MODEL

☒ RESULT CONVERTED INTO REGION UNITS IS CLOSE TO
ACTUAL VALUE

☐ SIGNIFICANCE OF MODEL IS HIGH

17/18
FIG. 17

260

COMPLEMENT MODEL INFORMATION

EXPLANATORY VARIABLE PATTERN (PATTERN NUMBER)	COMPLEMENT MODEL (REGRESSION MODEL EQUATION)	REGION CONVER- SION VALUE	DEVIA- TION	SIGNIFICANCE	
				SIGNIFICANCE RATIO (CELL ANALYSIS)	SIGNIFICANCE RATIO (REGION ANALYSIS)
p01	$y = 2.15 + (5.16 + 1.2D_1 + 2.3D_2 + \dots)x_1 + \dots$	47,975	-24%	25%	30%
p02	...	...	...	...	...
p03	...	...	...	...	...
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.

18/18

FIG. 18

COMPLEMENT DATA INFORMATION

270



CELL REGION	EXPLANATORY VARIABLE PATTERN (PATTERN NUMBER)			
	p01	p01	p01	...
U-001	780	772	785	...
U-002	792	764	793	...
U-003	775	751	780	...
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.