

## Documentation for the **RoomAccum** Program

Keith W. Kintigh

2020-03-18

The program is a Windows program written in Delphi, and extension of Pascal as implemented in the Embarcadero RAD Studio XE. It is run interactively in the Run window. The program logic can be seen in the program source file roomaccum12.dpr. Supporting procedures not essential to the program logic are in KWKSTD.PAS and are compiled in KWKSTE.DCU.

**Running the program.** Download the .exe file from Github to a directory on your computer. Prepare a simple .txt file with the room count data using an editor such as NotePad that creates simple .txt files. That file need to consist of the number of periods to be considered and the starting date for the sequence followed by, for each period, the end date of the period, and the number of rooms dated to that period. An example is provided here:

```
3
200  550  646
1000      1215
1150      4848
```

The .txt file that has the data must be saved in the same directory on your computer. To run the program, navigate using the Windows File Explorer to that directory and double-click on roomaccum12.exe. You will see the program banner reproduced below. After that, the program will prompt you for information that it needs to run. More information on running my programs may be found at <http://tfqa.com>.

RoomAccum V12.0  
Population Growth/Room Accumulation Simulation

(C) 2004-2020 Keith W. Kintigh  
All Rights Reserved

2014 East Alameda Drive  
Tempe, Arizona 85282

File with Period Data (Reply CON for Keyboard Entry) {.TXT} ? mimbresp3

File Must Have: nPeriod, Start[1], End[1], Rooms[1], End[2] Rooms[2]...

Provide the name of the file you wish to run. You need not enter the extension if it is the same as the default provided within the curly braces. If the program says it can't find the file you mistyped the name or it is in a different directory.

Display Annual Room Count on Screen {N} ?

Answering Y for yes to this question provides a verbose output of the program progress.

Write Output Data to TXT File {N} ? Y

Answering Y to this prompt says you want, in addition to the output on the screen, a file with the results. If you answer Y it will ask you for the file name.

TXT Output File {MIMBRESP3\_T.txt} ?

Enter the file name or if the offered default name is OK, just press enter.

Write Period by Period Output Data to CSV File {N} ?

Write Annual Output Data to CSV File {N} ?

Similarly, the program asks whether you want other sorts of program output saved to a .csv file by the program. This is useful if you want to log the results, for example in R.

Random Generator Seed (0 to set from clock) {0} ?

Random Seed: -581923690

You can set a random number generator seed if you wish to be able to reproduce a run exactly (rare).

[I]terate Growth Rate or [U]ser Control {I} ?

Normally you would iterate the growth rate, which means the program will iterate through possible rates for each until it finds the rate that produces the observed number of dated rooms. If you say N it will simply run the program for your supplied rate and tell you the results.

Structure Use Life {25} ?

S.D of Structure Use Life (reply 0 for Not Randomized) {0.0} ? 5

Use Lives are Normally Distributed Around 25 with S.D. of 5.0

Use Life Distribution Truncated to: Min=1; Max=2\*Structure Life

You first enter the nominal structure use-life. You then have the option to answer o (the default) to the next question to use that fixed use-life or to have normally distributed use-lives around your number with a standard deviation that you provide.

Randomly Age Period 1 Structures (Rec. Unless Uselife << Period 1 Length) {Y} ?

Ordinarily you would want to randomly age the structures in the initial period unless you believe that there was no previous occupation.

Scale Factor to Improve Estimates {100} ?

In order to make the computations more accurate, the program will scale up all of the room numbers by a factor for its internal computations.

Initial Number of Period 1 Rooms {0} ? 30

Here you supply the initial number of period 1 rooms. You will want to try different values in successive runs of the program. The article recommends running the program to find the number of initial rooms that make the smallest difference between the simulated growth rate of the first two periods with the formula's growth rate between the first two periods.

1-34

2-25

3-23

The program shows you the number of iterations for each period's calculations (which do not matter) and then shows the program results, below.

Structure Life: 15 Initial Period 1 Ages Randomized (Uniformly Distributed)

Start	End	Start	Initial	MidPt	Ending	Dated	Target	Growth
-------	-----	-------	---------	-------	--------	-------	--------	--------

Period	Date	Date	Rooms	Dated	Rooms	Rooms	Rooms	Rooms	Rate %
1	200	550	23	23	27	32	646	646	0.092
2	550	1000	32	15	40	51	1215	1215	0.104
3	1000	1150	51	24	268	1418	4848	4848	2.246

Run Again {Y} ?

This allows you to run the program again, starting from the structure use-life prompt. If you reply no, then it reports the formula-derived, between period growth rates.

Period	Start	End	Implied Growth
1 - 2	375	775	0.095
2 - 3	775	1075	0.831

Program End

OK to Close Program Window {Y} ?