1.(d)

Mark Rittman. “What is Sparsity, and Why Should I Be Concerned With It?" June 27, 2005.

http://www.dba-oracle.com/oracle\_news/2005\_6\_27\_What\_Is\_Sparsity.htm

Suppose there is a data cube containing information of three attributes: Customer, Week and Store. If there are 1000 customer data, 100 week data and 10 store data, then the total cell of this 3-dimensional cube will be 1000\*100\*10 = 1000000 cells. However, it is impossible for 1,000 customers to go to all 10 stores for 100 consecutive weeks, which means not all cells will be filled with values. In contrast, the purchase behavior is a relatively low frequency behavior compared to other behaviors such as communication transmission, data processing, etc, I think the sparsity in this data cube will be very high. A typical data cube is sparse because not all combinations of attributes contain data.