Using LOOKUP functions as filters

Goal

List the top 25 destination schools for students that are admitted to UC.

Functionality/Requirements

- Each view should show the top 25 destination universities for students admitted to UC, the total number of students going to that university, and the percent of total number of students admitted who go to that university.
- List should dynamically filter on:
    - Campus admitted
    - Application Level
    - Year
- Students who are 'Unknown' or NULL should be included in the table calculations (i.e. the percent of all students admitted) but should not appear in the view.
- Universities that have fewer than 10 students in their total should be included in table calculations, but suppressed for privacy.

Solution in Brief

```
helper = IF [College Name] = 'Unknown' OR ISNULL([College Name]) THEN 0
         ELSE [Person] END
```

```
Top Filter = LOOKUP(RANK(SUM([helper]), 'desc'),0)
```

```
Data Suppress = LOOKUP(SUM([helper]),0)
```

Add `[Top Filter]` and `[Data Suppress]` to the Filters card and set to at most 25 and at least 10, respectively.

Solution Description

- Set up table with `College Name` in the row card. Use `sum(Person)` and percent of total of `sum(Person)` as the columns.
- Next, use `Year`, `App Level` as single select filters. Create a parameter with campus names and Universitywide and a dimension that will filter based on the parameter. Use the new dimension as a filter and add the parameter as a single select. These filters filter both the view that we see on the sheet *and* the data that is being used to make a calculation. This is what we want. When we select Berkeley freshmen in 2017, we want the table to reflect only those students who were admitted to Berkeley as freshmen in 2017.

At this point, we may be tempted to add College Name filters for 'Unknown' and NULL as well as a filter to only display the top 25 schools. This does not fulfill the functionality requirements, though, as these filters act on the data the same ways as the last ones do; we would see data that exclude all 'Unknown' and NULL values as well as non-top 25 campuses from both the view *and* the table calculations. Instead, we use a helper measure and a series of RANK and LOOKUP functions.

- First, we want to rank each campus from the largest to smallest number of attendees so that we can pick the top 25 of them. We may be tempted to use the RANK function on

Person. However, in many cases, the unwanted College Name types will be in the top 25. This will push other school's ranks down, and when we filter away the unwanted names, we may have fewer than 25 campuses with rank 1-25. Instead, we create a helper measure. The helper measure is identical to Person unless it is an unwanted Campus Name, then it is zero. (Note, you could use a parameter here to get, for instance, only UC campuses, only CSU, only four-year, etc.)

  - `IF [College Name] = 'Unknown' OR ISNULL([College Name]) THEN 0 ELSE [Person] END`

- Next, we create a measure that will filter for the top 25 campuses. This measure ranks the sum of Person, via helper, but gives zero weight to the campuses we do not want in our view. The LOOKUP function is useful in a lot of contexts, but here we are using it to control what we actually see in our view. The first argument is the data we care about `rank(sum([helper]), 'desc')`, while the second argument says that we want to see the data from each row applied to that row (putting a -1 there would apply row n's data to row n-1).
  - `lookup(rank(sum([helper]), 'desc'),0)`
- We use a similar process to suppress campuses with fewer than 10 students. Again, we use our helper dimension. This gets small numbers out of the view, but also guarantee that we do not get unwanted campus names, as the helper variable will be 0 in these cases.
  - `lookup(sum([helper]),0)`
- Add the two new measures into the filters category and set ranges as appropriate.