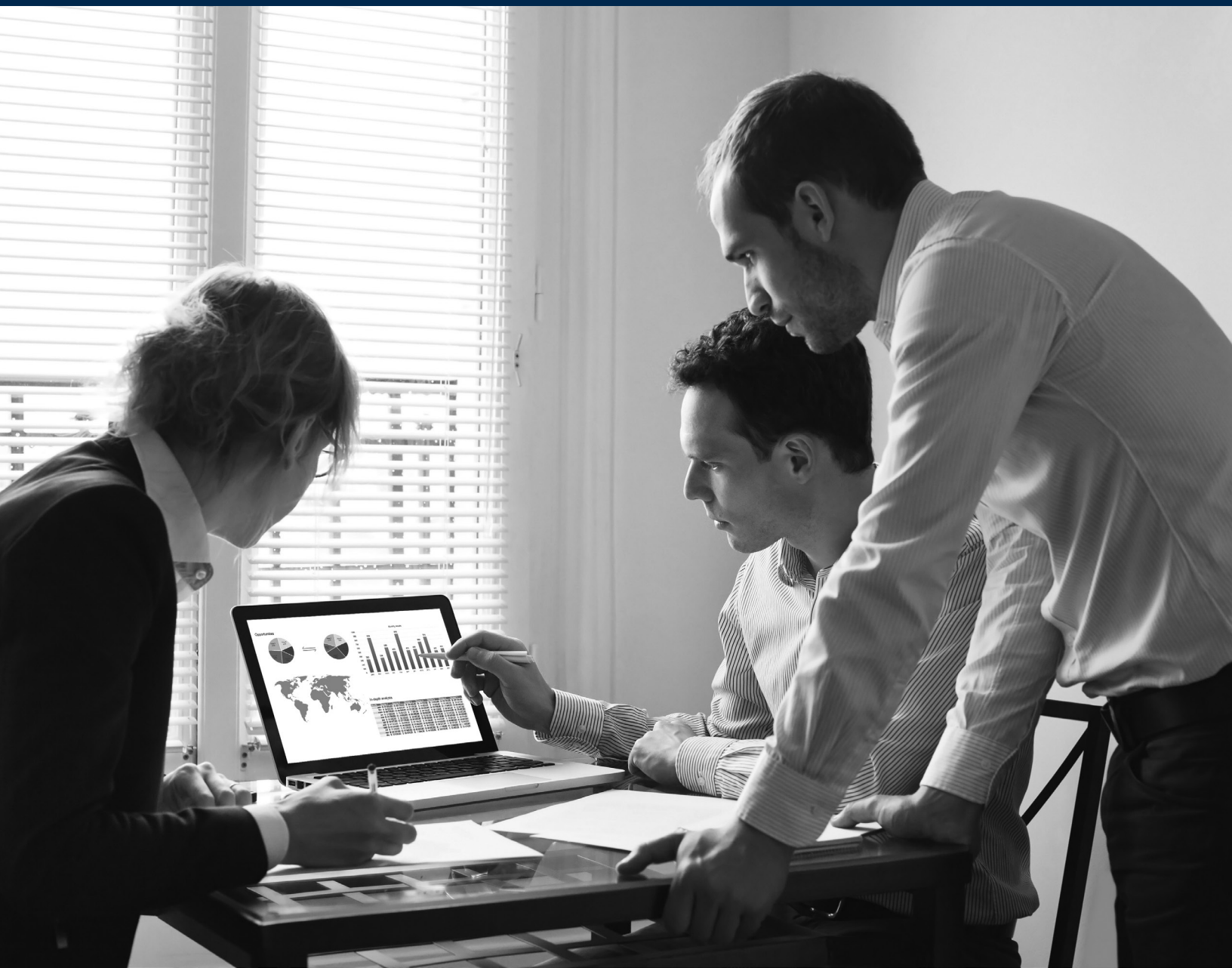
LinkUp Market Reports

User Guide



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About Market Reports

ABOUT MARKET REPORTS

LinkUp has built the world's most extensive, accurate, and up-to-date set of jobs direct from employer websites. With the largest and highest quality job listings index of 5 million job openings sourced from 50,000 company websites globally, LinkUp has become a leading provider of job market data and analytics. From that robust and unique dataset of jobs, LinkUp has developed Market Reports which delivers brilliant insights into the job market.

Market Reports is a SaaS application that allow users to create reports that extract real-time and historical job market data, resulting in powerful insights tailored to specific requirements. The reports can range in scope, are easy to build, completely customizable, and can be delivered in a variety of formats.

Location
Customize your report based on city, MSA, Zip code, County, Region, or State.

Job Details
Organize data by industry NAICS code, job category, or company.

Time
Analyze by date of opening, closed, or duration of a job posting.

How to leverage Market Reports

- Compare job counts by company, region, industry and job category
- Use analytics to draw insights about turnover and churn
- Discover historic and predictive trends and correlations
- Receive automatic reports updates direct to your email or FTP
- Combine LinkUp data with population, demographic, macro and micro economic data
- Identify locations, industries and companies with changing workforce demand
- Create powerful competitive intelligence analyses

Features and Filters

Features and Filters of Market Reports

Market Reports is a feature of LinkUp's Job Data Engine (JDE) product. This feature analyzes over 100 million job records and creates reports that are consumable in a spreadsheet format. Each report is a subset of the millions of data points calculated every day. These data points are created through aggregates.

Aggregates

Aggregates are what defines how the job records are analyzed each day. A single new aggregate in the system could add hundreds of thousands of new data points to report from. An aggregate is comprised of 5 parts: Filters, Primary Dimension, Secondary Dimension, Aggregation Period, and Metric Type. The details of each are below.

Filters

Filters are how the system determines which jobs should be analyzed. A good example of this would be the country filter. Perhaps you only want to analyze jobs that are in the U.S. because you're looking for U.S. job market trends.

An aggregate can have many filters. In fact, LinkUp's standard set of filters includes several that are aimed at getting rid of postings that are advertisements or possibly fabricated.

Dimensions

Dimensions are the properties of a job record that the aggregate is grouped by. The number of dimension types in the system is expandable, but the current list includes the following:

- Company
- 2 Digit NAICS
- MSA
- State (US only)
- Category
- County (US only)
- 3 Digit NAICS
- Country
- City

Primary Dimensions

The primary dimension of an aggregate is the first grouping. This becomes a tab in an Excel formatted report, or the file name in a CSV style report. All counts or values shown on that tab are specific to that dimension value. As an example, if the "Primary Dimension" was "State," a report could be constructed with a tab for each state within an Excel workbook. Where the CA tab only contains information about jobs in California, listed by a secondary dimension such as NAICS code or company.

Note that you can choose "None" for the primary dimension, and this first grouping will simply not be done.

Features and Filters of Market Reports (continued)

Secondary Dimensions

The secondary dimension is the second grouping. This becomes the row on each report. The same list of dimensions are available here. Continuing our example from above, if we chose “State” as our primary dimension and “Company” as our secondary dimension, we could construct a report for each state that has rows of values for each company.

Note that for some dimensions a job record may not have a value. These jobs are then tallied under the “Other” row or tab.

Aggregation Period

The Aggregation Period is really the third level of grouping. This determines the columns of a given report. Possible values for aggregate period are:

- Daily
- Weekly
- Monthly
- Quarterly
- Yearly

This allows the system to aggregate job records over any period necessary. It can provide as granular as each day or as high level as each year.

Continuing on our example if we choose Monthly for our Aggregate Period and keep the Dimensions as “State By Company,” the reports we construct from this Aggregate could have a tab for California (and all other states), a row for Target (and all other companies in our data set), and columns for each month.

Metric Type

A Metric Type is what kind of analysis we’re doing. It determines what the value of a given cell *means*. To see explicitly how each of these are computed, see the Appendix. The current list of Metric Types are:

- Average Daily Active Job Count
- Created Job Count
- Active Duration
- Unique Active Job Count
- Deleted Job Count
- Closed Duration

Average Daily Active Job Count

This metric is an average of how many job postings were active for the given grouping. For example, if you were looking at a cell that represented the month of January 2012 for California and Target, this cell would indicate how many job postings were active, on average, per day in January of 2012 in California for Target.

Unique Active Job Count

This metric is a count of how many unique job postings were active for the given grouping. For example, if you were looking at a cell that represented the month of January 2012 for California and Target, this cell would indicate how many job postings were active in January of 2012 in California for Target.

Features and Filters of Market Reports (continued)

Created Job Count

This metric is a count of how many new job postings were created for the given grouping. For example, if you were looking at a cell that represented the month of January 2012 for California and Target, this cell would indicate how many unique job postings were created in January of 2012 in California by Target.

Deleted Job Count

This metric is a count of how many job postings were removed for the given grouping. For example, if you were looking at a cell that represented the month of January 2012 for California and Target, this cell would indicate how many job postings were removed in January of 2012 in California by Target.

Active Duration

This metric is the average number of days each posting was active in a given grouping, only considering jobs that were active in the given period. For example, if you were looking at a cell that represented the month of January 2012 for California and Target, this cell would indicate the average number of days job postings were were active in January of 2012 in California by Target, for any and all postings that were active in January of 2012.

Closed Duration

This metric is the average number of days each posting was active in a given grouping, only considering postings that have closed in the given period. For example, if you were looking at a cell that represented the month of January 2012 for California and Target, this cell would indicate the average number days job postings were were active in January of 2012 in California by Target, for any and all postings that were taken down in January of 2012.

Building A Report

Building a Market Report

Building a Market Report is easy, fast, and completely customizable. Reports are delivered as an Excel file with many tabs, or a zip archive of many CSV files. The data within them is always a subset of an Aggregate. A report is defined by 7 properties:

- Aggregate
- Primary Dimension Values
- Secondary Dimension Values
- Date Range
- Schedule
- Format
- Name

Primary Dimension Values

These are the values of the Primary Dimension this report will contain. This will be the explicit list of Excel tabs or CSV files contained in the final result. This allows for users to get only the subset of values they care to look at. It's also important to be able to limit this, as certain Dimensions like County and MSA have hundreds or thousands of possible values. There is also a "select all" option, if the user simply wants every possible value.

Secondary Dimension Values

These are the values of the Secondary Dimension this report will contain. This will be the explicit list of rows each tab or CSV file will contain. There is also a "select all" option, if the user simply wants every possible value.

Date Range

The Date Range is the range of columns the report will contain. Based on the Aggregate selected, each column will be a Day, Week, Month, etc. This determines how wide each row will be. Currently the system allows any date range dating back to January 1, 2012. It can be specified either as an Absolute or a Relative range. Absolute allows a user to select a specific start and stop date for their report such as January 1, 2014 through January 1, 2016. Relative allows a user to select a rolling window of dates, such as 12 to 14 months ago. For reports running on a Schedule, the Relative Date Range is much more useful.

Note: For absolute Date Ranges, the end date is exclusive. So if January 1, 2015 is selected as the end date, the report will contain all data up to January 1, 2015 at midnight UTC. That is, there will be no January 1, 2015 column on the report.

Building a Market Report (continued)

Schedule

A Report may or may not have a Schedule. The schedule allows for a report to be run automatically after the nightly aggregation is complete. It's possible to select a schedule that is Daily, Weekly, Monthly, Quarterly, or Yearly depending upon the Aggregate selected. It's not possible, for example, select a Daily schedule for an Aggregate that is Monthly as the next month's data is not complete until each month end.

It's also possible to add users to send the reports via email. The users must have access to JDE and Market Reports to be added to the "Send To" list. They will be sent an email when the scheduled report is run with a link to the newly generated report. That link will require them to login to JDE, and will validate that their Organization is correctly associated to that report before allowing them to download the file.

Format

Reports are delivered as CSV or Excel files. CSV formatted reports will be packaged in the form of a zip archive. Each Primary Dimension Value selected will create a single file named with the value inside that archive. Excel formatted reports will have a tab for each Primary Dimension Value selected.

Name

This is the Name of the report. This is what will be displayed in the Report History drop down for users, and what the base name of the report file will be. All special characters will be replaced with underscores at file generation time to ensure a valid file name.

Job Record Definitions

Job Record Definitions

A LinkUp Job Record is a record of a job posting from a company's website or career portal. Each URL found counts as a unique job posting. LinkUp captures many data points when capturing job postings. Some of the more important data points are the dates when LinkUp found the job postings. LinkUp captures 4 important dates at this time:

- Created Date
- Last Updated Date
- Last Checked Date
- Deleted Date

Created Date

This is the first date in which LinkUp found the URL. If this particular URL went up and down multiple times throughout a period of time, LinkUp uses the earliest known Created Date.

Last Checked Date

This is the latest time the URL was verified to be active. Upon creation of a new posting, this date will match the Created Date. By default, LinkUp attempts to check all URLs once every 48 hours.

Last Updated Date

This is the latest time the job posting has been modified. Upon creation of a new posting, this date will match the Created Date. Over time, as postings change their descriptions or titles, LinkUp updates this date to indicate changes have been made.

Deleted Date

This is the date a posting has been removed from the website. If a job record has no Deleted Date, the posting is still active and on the website.

Metric Type Definitions and Examples

Metric Type Definitions and Examples

Average Daily Active Job Count:

Average Daily Active Job Count is our best approximation of the average number of active jobs for the time frame and grouping in question.

For example, If we were looking at the Average Daily Active Job Count for “Company 1” in Minnesota on January 1, 2016, the value would represent the number of jobs in LinkUp’s historical job data whose created date is on or before January 1, 2016 AND last checked date is on or after January 1, 2016 AND company is “Company 1” AND state is Minnesota.

To further illustrate, look at the following example of how the following 10 job records would be aggregated for an “Active Job Count by state per company per month” would be calculated. As an Aggregate this would be defined as Standard Filter, Primary Dimension: State, Secondary Dimension: Company, Aggregate Period: Monthly, Metric Type: Average Active Job Count.

Note that for the purpose of the example we strip any unnecessary fields from the job record. We also convert IDs to names and timestamps to human readable dates.

Example Data:

Hash	Company_Id	State	createdDate	deleteDate
examplehash1	1	MN	2016-01-01	2016-01-06
examplehash2	1	MN	2015-12-30	2016-01-03
examplehash3	3	MN	2016-01-02	2016-01-03
examplehash4	2	CA	2015-12-23	2016-01-01
examplehash5	2	CA	2016-01-01	2016-01-06
examplehash6	3	AL	2016-01-02	2016-01-05
examplehash7	3	AL	2015-12-31	2016-01-03
examplehash8	4	MN	2016-01-01	2016-01-05
examplehash9	4	MN	2016-01-01	2016-01-03
examplehash10	4	MN	2016-01-01	2016-01-06

Metric Type Definitions and Examples (continued)

In this case Minnesota Tab or CSV file would have the following counts per month. Note that the left hand column would be replaced with the company name, rather than using the ID. This is just an example.

	2015-12-01	2016-01-01
1	.0645 (2/31)	.2258 (7/31)
3	0	0
4	0	.3548 (11/31)

You can see that Company 2 is off the sheet entirely, as it had no active jobs in Minnesota for this time frame.

The Alabama Tab or file would have the following counts:

	2015-12-01	2016-01-01
3	.0323 (1/31)	.129 (4/31)

Obviously this is a very small sample size, with short job duration, but this illustrates how we derive active job count by state, per company, per day.

It is also possible to aggregate this same information per week,month, quarter, year. For Average Active Job Counts we do this as an average per day over the time frame. So for a monthly Average Active Job count, if a job became active on the 15th of March and stayed active until the 15th of April, we would note that as 15/31 for March, and 15/30 for April. We round this to 4 decimal places. Similar averaging applies for weekly, quarterly, and yearly.

Unique Active Job Count:

Unique Active Job Count is a count of unique active jobs for the time frame and grouping in question.

For example, If we were looking at the Unique Active Job Count for “Company 1” in Minnesota on January 1, 2016, the value would represent the number of jobs in LinkUp’s historical job data whose created date is on or before January 1, 2016 AND last checked date is on or after January 1, 2016 AND company is “Company 1” AND state is Minnesota.

To further illustrate, look at the following example of how the following 10 job records would be aggregated for an “Unique Active Job Count by state per company per day” would be calculated. As an Aggregate this would be defined as Standard Filter, Primary Dimension: State, Secondary Dimension: Company, Aggregate Period: Daily, Metric Type: Unique Active Job Count.

Metric Type Definitions and Examples (continued)

Note that for the purpose of the example we strip any unnecessary fields from the job record. We also convert IDs to names and timestamps to human readable dates.

Example Data:

Hash	Company_Id	State	createdDate	deleteDate
examplehash1	1	MN	2016-01-01	2016-01-06
examplehash2	1	MN	2015-12-30	2016-01-03
examplehash3	3	MN	2016-01-02	2016-01-03
examplehash4	2	CA	2015-12-23	2016-01-01
examplehash5	2	CA	2016-01-01	2016-01-06
examplehash6	3	AL	2016-01-02	2016-01-05
examplehash7	3	AL	2015-12-31	2016-01-03
examplehash8	4	MN	2016-01-01	2016-01-05
examplehash9	4	MN	2016-01-01	2016-01-03
examplehash10	4	MN	2016-01-01	2016-01-06

In this case Minnesota Tab or CSV file would have the following counts per day. Note that the left hand column would be replaced with the company name, rather than using the ID. This is just an example.

	2015-12-30	2015-12-31	2016-01-01	2016-01-02	2016-01-03	2016-01-03	2016-01-05
1	1	1	2	2	1	1	1
3	0	0	0	1	0	0	0
4	0	0	3	3	2	2	1

You can see that Company 2 is off the sheet entirely, as it had no active jobs in Minnesota for this time frame.

The Alabama Tab or file would have the following counts:

	2015-12-31	2016-01-01	2016-01-02	2016-01-03	2016-01-04
3	1	1	2	1	1

Metric Type Definitions and Examples (continued)

Obviously this is a very small sample size, with short job duration, but this illustrates how we derive unique active job count by state, per company, per day.

It is also possible to aggregate this same information per week, month, quarter, year. For Average Active Job Counts we do this as an average per day over the time frame. So for a monthly Average Active Job count, if a job became active on the 15th of March and stayed active until the 15th of April, we would note that as 15/31 for March, and 15/30 for April. We round this to 4 decimal places. Similar averaging applies for weekly, quarterly, and yearly.

Created Job Count:

This metric represents the number of newly created job postings in the time frame and grouping in question.

For example, If we were looking at the Created Job Count for the Technology category in Minnesota during the month of January, 2016, the value would represent the number of jobs in LinkUp's job data whose created date between January 1, 2016 and January 31, 2016 (inclusive) AND category is Technology AND state is Minnesota.

To further illustrate, look at the following example of how the following 10 job records would be aggregated for an "Created Job Count by state per category per month" would be calculated. This Aggregate would be defined as the Standard Filter, Primary Dimension of state, Secondary Dimension of Category, Aggregate Period of Monthly, and Metric Type of Created Job Count.

Note that for the purpose of the example we strip any unnecessary fields from the job record. We also convert IDs to names and timestamps to human readable dates.

Example Data:

Hash	Category	State	createdDate
examplehash1	Technology	MN	2016-01-01
examplehash2	Technology	MN	2015-12-30
examplehash3	Finance	MN	2016-01-02
examplehash4	Education	CA	2015-12-23
examplehash5	Education	CA	2016-01-01
examplehash6	Finance	AL	2016-01-02
examplehash7	Finance	AL	2015-12-31
examplehash8	Education	MN	2016-01-01
examplehash9	Education	MN	2016-01-01
examplehash10	Education	MN	2016-01-01

Metric Type Definitions and Examples (continued)

In this case the Minnesota tab or CSV file would have the following counts per month:

Example Data:

	2015-12-01	2016-01-01	2016-02-01
Technology	1	1	0
Education	0	2	1
Finance	0	1	0

There would also be a tab for CA which would only have an education row, and a tab for AL which would only have a finance row.

This one is a pretty straightforward count, but important to show the system can do monthly aggregation as well.

Deleted Job Count:

This metric represents the number of jobs deleted in the time frame and grouping in question.

For example, If we were looking at the Deleted Job Count for the Technology category in the MSA (metropolitan statistical area) of Albuquerque, NM during Q2 of 2016, the value would represent the number of jobs in LinkUp's job data whose deleted date between April 1, 2016 and June 30, 2016 (exclusive) AND category is Technology AND postal code corresponds to the Albuquerque, NM MSA.

Example Data:

Hash	Category	MSA	deleteDate
examplehash1	Technology	Albuquerque, NM	2016-01-02
examplehash2	Technology	Albuquerque, NM	2015-12-31
examplehash3	Finance	Albuquerque, NM	2016-01-03
examplehash4	Education	Albuquerque, NM	2015-12-24
examplehash5	Education	Baton Rouge, LA	2016-01-02
examplehash6	Finance	Baton Rouge, LA	2016-01-03
examplehash7	Finance	Baton Rouge, LA	2016-01-01
examplehash8	Education	Baton Rouge, LA	2016-01-24
examplehash9	Education	Baton Rouge, LA	2016-01-02
examplehash10	Education	Baton Rouge, LA	2016-02-02

Metric Type Definitions and Examples (continued)

The process is much the same as Created Job Count, except we use the deletedDate field on the job record. So the Albuquerque, NM tab or file will have the following data:

	2015-12-01	2016-01-01
Technology	1	1
Finance	0	1
Education	1	0

And the Baton Rouge, LA tab or file will have this data:

	2015-12-01	2016-01-01
Finance	1	1
Education	0	4

Active Duration:

This metric represents the average number of days jobs which were active in the time frame and grouping in question have been active.

For example, If we were looking at the Active Duration for the Technology category in the MSA (metropolitan statistical area) of Albuquerque, NM during Q2 of 2016, the value would represent the average number of active days for jobs in LinkUp's job data who were active between April 1, 2016 and June 30, 2016 (inclusive) and category is Technology and postal code corresponds to the Albuquerque, NM MSA.

Example Data:

Hash	Category	MSA	createdDate	deletedDate
examplehash1	Technology	Albuquerque, NM	2016-01-01	2016-01-02
examplehash2	Technology	Albuquerque, NM	2015-12-30	2015-12-31
examplehash3	Finance	Albuquerque, NM	2016-01-02	2016-01-03
examplehash4	Education	Albuquerque, NM	2015-12-23	2015-12-24
examplehash5	Education	Baton Rouge, LA	2016-01-01	2016-01-02
examplehash6	Finance	Baton Rouge, LA	2016-01-02	2016-01-03
examplehash7	Finance	Baton Rouge, LA	2015-12-31	2016-01-01
examplehash8	Education	Baton Rouge, LA	2016-01-01	2016-01-24
examplehash9	Education	Baton Rouge, LA	2016-01-01	2016-01-24
examplehash10	Education	Baton Rouge, LA	2016-01-01	2016-02-01

Metric Type Definitions and Examples (continued)

We have to count the number of active days for each period for each job record. To do so we count the number of days from create date to delete date OR the end of the period whichever is earliest. Then divide by the number of jobs. So the Albuquerque, NM tab or file will have the following data:

	2015-10-01	2016-01-01
Technology	24 (48/2)	28 (28/1)
Finance	29 (29/1)	31 (31/1)
Education	19 (19/1)	0

And the Baton Rouge, LA tab or file will have this data:

	2015-10-01	2016-01-01
Finance	22 (44/2)	19 (19/1)
Education	24 (48/2)	23.75 (95/4)

Closed Duration:

This metric represents the average number of days jobs which were removed in the time frame and grouping in question have been active.

For example, If we were looking at the Closed Duration for the Technology category in the MSA (metropolitan statistical area) of Albuquerque, NM during Q2 of 2016, the value would represent the average number of active days for jobs in LinkUp's job data who were removed between April 1, 2016 and June 30, 2016 (exclusive) and category is Technology and postal code corresponds to the Albuquerque, NM MSA.

Example Data:

Hash	Category	MSA	createdDate	deletedDate
examplehash1	Technology	Albuquerque, NM	2016-01-01	2016-01-02
examplehash2	Technology	Albuquerque, NM	2015-12-30	2015-12-31
examplehash3	Finance	Albuquerque, NM	2016-01-02	2016-01-03
examplehash4	Education	Albuquerque, NM	2015-12-23	2015-12-24
examplehash5	Education	Baton Rouge, LA	2016-01-01	2016-01-02
examplehash6	Finance	Baton Rouge, LA	2016-01-02	2016-01-03
examplehash7	Finance	Baton Rouge, LA	2015-12-31	2016-01-01
examplehash8	Education	Baton Rouge, LA	2016-01-01	2016-01-24
examplehash9	Education	Baton Rouge, LA	2016-01-01	2016-01-24
examplehash10	Education	Baton Rouge, LA	2016-01-01	2016-02-01

Metric Type Definitions and Examples (continued)

We have to count the number of active days for each period for each job record. To do so we count the number of days from create date to delete date. Then divide by the number of jobs. So the Albuquerque, NM tab or file will have the following data:

	2015-12-01	2016-01-01
Technology	21 (21/1)	28 (28/1)
Finance	0	31 (31/1)
Education	19 (19/1)	0

And the Baton Rouge, LA tab or file will have this data:

	2015-12-01	2016-01-01	2016-02-01
Finance	0	23 (46/2)	0
Education	0	24.33 (73/3)	22 (22/1)

Support

Support

LinkUp provides Market Reports support Monday through Friday from 8am to 5pm CDT.

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