

## Job Seekers Take a Holiday in December, Return in Force in January

This edition of *DHI Hiring Indicators* highlights dramatic seasonal swings in job seeking activity, as measured by the flow of applications to online vacancy postings. Section I highlights a few results. Section II draws on the **DHI Vacancy and Application Flow Database** to develop evidence on seasonality in application flows. Section III draws on the Job Openings and Labor Turnover Survey to present statistics on vacancy duration and recruiting intensity per vacancy. Section IV provides additional information about the *DHI Hiring Indicators* and DHI Group, Inc.

### ***I. Highlights***

1. Application flows drop off more than 30 percent in December relative to the preceding October.
2. Application flows rebound sharply in January. The January volume is nearly 60 percent greater than in December and about 10 percent larger than in the preceding October.
3. Daily applications per active vacancy posting exhibit the same pronounced seasonal swings in December and January.
4. The **DHI-DFH Mean Vacancy Duration Measure** rose to 28.4 working days in October, 0.2 days above a revised value of 28.2 days in September.

“Employers should anticipate much lower application flows for vacancy postings in the second half of December than postings in January” said Dr. Steven Davis, William H. Abbott Professor of International Business and Economics at the University of Chicago Booth School of Business. “According to analysis of the DHI Database, applications to online vacancy postings drop off by about 30 percent in December. Jobseekers re-engage in January, as indicated by a jump of nearly 60 percent in their volume of applications.” Davis is a co-developer of the DHI Database and co-creator of the DHI-DFH Mean Vacancy Duration Measure and Recruiting Intensity Index.

“It’s increasingly difficult for employers across the U.S. to find and hire the right skilled candidates for positions. Our recent semi-annual hiring survey found it’s taking longer than ever to hire professionals for roles,” said Michael Durney, President and CEO of DHI Group, Inc. “Wage pressure and companies failing to offer competitive salaries is prolonging the hiring process, ultimately putting candidates in charge when it comes to negotiations and choosing the ideal position.”

### ***II. Results Based on the DHI Vacancy and Application Flow Database***

The **DHI Vacancy and Application Flow Database** links daily application flows to millions of online vacancy postings. The raw data come from DHI Group, Inc., which owns and operates several specialized online platforms for posting job vacancies and attracting applications. Employer-side clients comprise organizations that directly hire their own employees, recruitment firms that solicit applicants for third parties, and staffing firms that hire workers to lease to other firms. Vacancy postings are concentrated in technology sectors, software development, other computer-related occupations, engineering, financial services, and certain other

professional occupations. The DHI Database currently contains nearly 7 million unique vacancy postings from more than 50,000 employer-side clients.<sup>1</sup> These postings have attracted nearly 60 million applications since January 2012.<sup>2</sup> More than half of applications went to positions posted by recruitment and staffing firms.

Table II.1 highlights certain seasonal swings in the volume of applications in the DHI Database. Looking over the past four years, the flow of applications in December is only 67 to 74 percent as large as in the preceding October. On average, the applications flow in December is 69 percent as large as in October. Applications rebound sharply in January to levels that average 9 percent greater than in the preceding October. The last row of the table shows huge jumps in the volume of applications from December to January, ranging from 45 to 73 percent across years. In short, applications by job seekers drop off sharply in December and rebound even more strongly in January.

Table II.1. Application Flows in December and January Relative to the Preceding October

	2012	2013	2014	2015	Average
Ratio of December-to-October Applications	0.67	0.65	0.71	0.74	0.69
Ratio of January-to-October Applications	1.16	1.04	1.10	1.07	1.09
Ratio of January-to-December Applications	1.73	1.59	1.54	1.45	1.58

Note: January data refer to the first month of the following year.

Perhaps the big monthly swings in application flows reflect big swings in the number of job vacancies. To investigate this possibility, Table II.2 considers daily application flows per active vacancy posting. As the table shows, the December and January seasonal swings in daily applications per active vacancy posting are nearly the same as the swings in the overall volume of applications. Taken together, Tables II.1 and II.2 imply that nearly all of the seasonality in daily application flows per vacancy reflects seasonal changes in job seeker activity – **not** seasonal changes in the number of vacancy postings.

Table II.2. Daily Applications Per Vacancy Posting in December and January Relative to the Preceding October

	2012	2013	2014	2015	Average
Ratio of December-to-October Applications	0.64	0.68	0.69	0.76	0.69
Ratio of January-to-October Applications	1.23	1.14	1.02	1.12	1.13
Ratio of January-to-December Applications	1.91	1.68	1.47	1.45	1.63

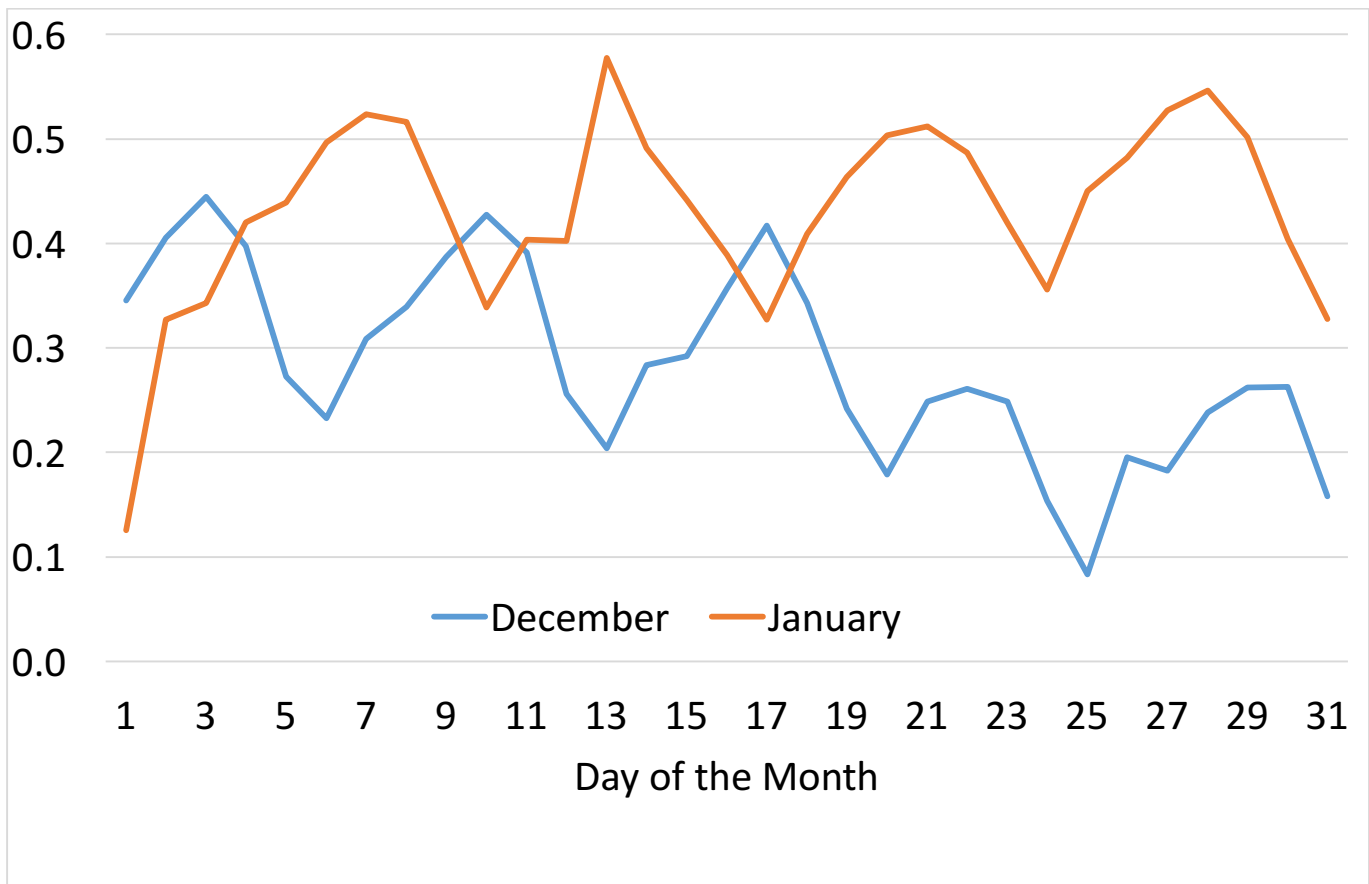
<sup>1</sup> Currently, the DHI Database draws mainly from DHI’s Dice.com platform. Other DHI platforms include [eFinancialCareers](#), [Biospace](#), [Rigzone](#), [ClearanceJobs](#), [Health eCareers.com](#), and [Hcareers](#). Analysis of the DHI Database in this report draws on “Application Flows” by Steven J. Davis and Brenda Samaniego de la Parr

<sup>2</sup> When posting a vacancy, the DHI client decides whether job seekers must file an application via email through the DHI platform or through an external URL operated by the client or a third party. In the first case, the DHI database records the number of completed email applications. In the second case, the database records how often job seekers click through to the external URL. We pool these two classes of vacancies and applications in this report.

Notes: Daily applications per vacancy posting equal the sum of applications to active postings in the month divided by the number of active vacancy posting days in the month. January data refer to the first month of the following year.

Figure II.1 takes a closer look at the behavior of daily applications per active posting in December and January in the preceding four years. The rough saw-tooth pattern in the two curves reflects the very large day-of-the-week swings in application flows documented in the September 2016 edition of *DHI Hiring Indicators*. Setting the saw-tooth pattern aside, the figure shows that daily applications per vacancy drop to very low levels in the last two weeks of December and on January 1. Christmas Day has the smallest number of applications per vacancy. Application flows jump sharply after January 1 and remain at high levels throughout most of the month.

Figure II.1 Daily Applications per Vacancy by Day of the Month, December and January



Notes: Daily applications per vacancy equal the number of applications on the indicated day divided by the number of active postings on the same day, averaged over 2012-2015 for December and 2013-2016 for January.

The seasonal pattern of reduced application flows around the year-end holiday season and New Year's Day is unsurprising. However, the magnitudes of the seasonal swings are very large. Based on the evidence in this report, employers should anticipate much lower application flows for vacancy postings in the second half of December than for postings in January.

### III. Results Based on the Job Openings and Labor Turnover Survey

The **DHI-DFH Mean Vacancy Duration Measure** rose to 28.4 working days in October, 0.2 days above a revised value of 28.2 days in September and 1.1 days below its historical peak in April 2016. Figure III.1 shows the evolution of the mean vacancy duration in the United States since 2001. The vacancy duration measure in Figure III.1 reflects the vacancy concept in the Job Openings and Labor Turnover Survey (JOLTS). Specifically, a job opening gets “filled” according to JOLTS when a job offer for the open position is accepted. So the vacancy duration statistics refer to the average length of time required to fill open positions. Typically, there is also a lag between the fill date and the new hire's start date on the new job.

Figure III.2 displays four other indicators of labor market slack alongside the mean vacancy duration. All five measures show a pronounced tightening of U.S. labor markets since 2009. Three of the measures – mean vacancy duration, the vacancy-unemployment ratio, and the ratio of vacancies to the number of persons unemployed for 26 weeks or less – now exceed their peak values prior to the recession of 2008-2009. The post-recession rise in the mean vacancy duration is especially pronounced.

Figure III.1. DHI-DFH Measure of National Mean Vacancy Duration, January 2012 to October 2016

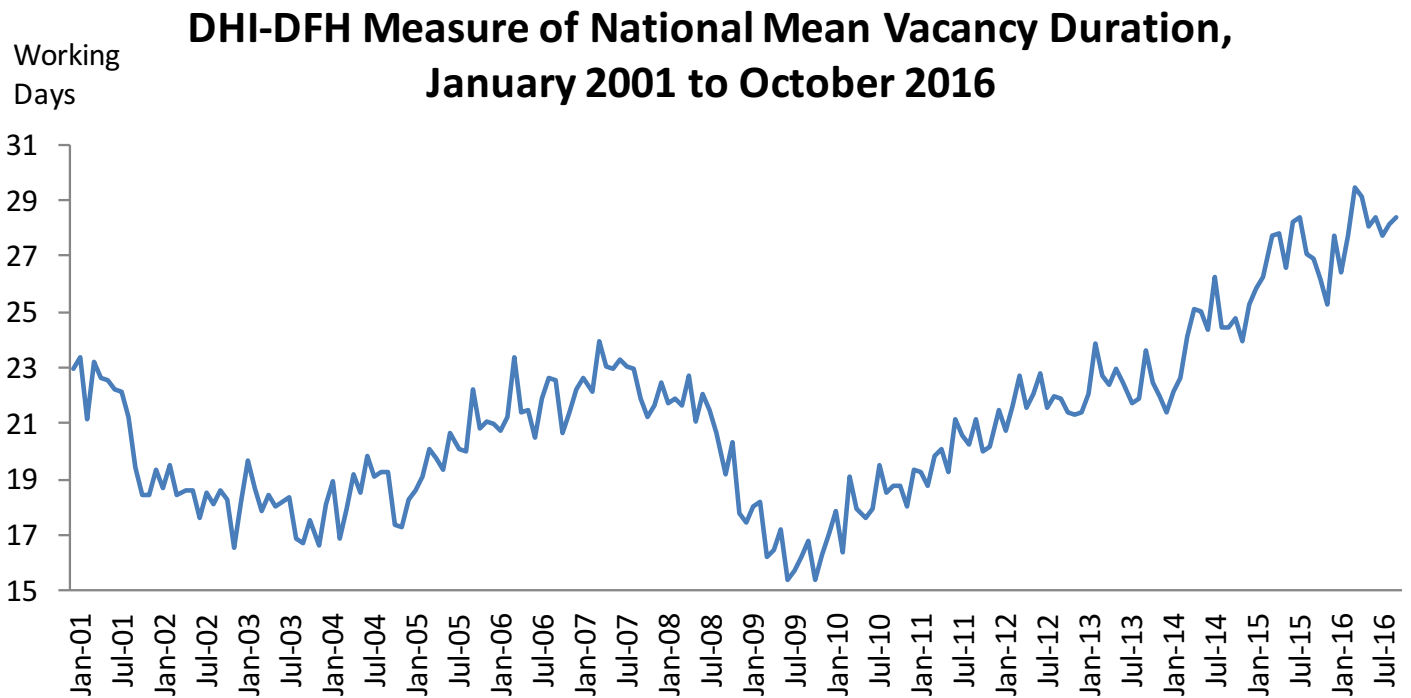
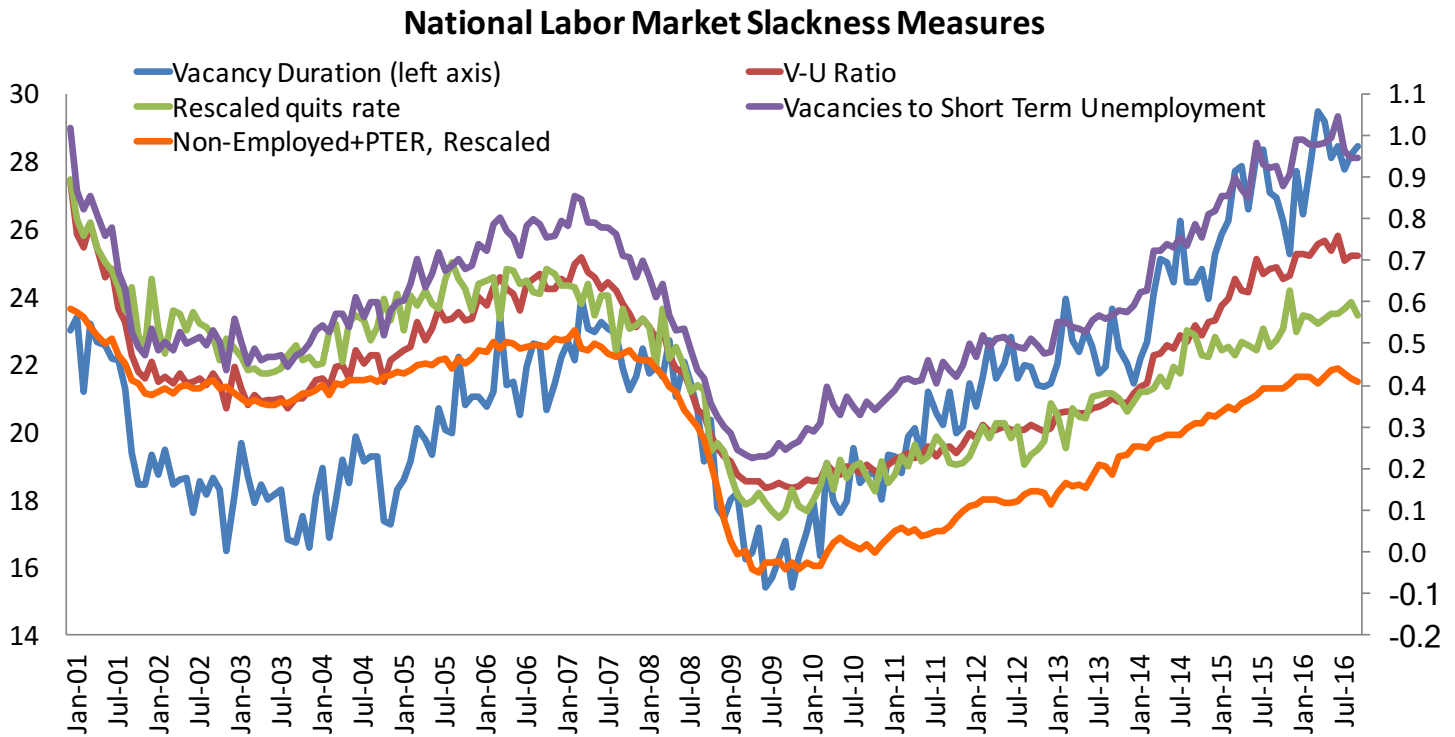


Figure III.2. National Labor Market Slackness Measures, January 2012 to October 2016

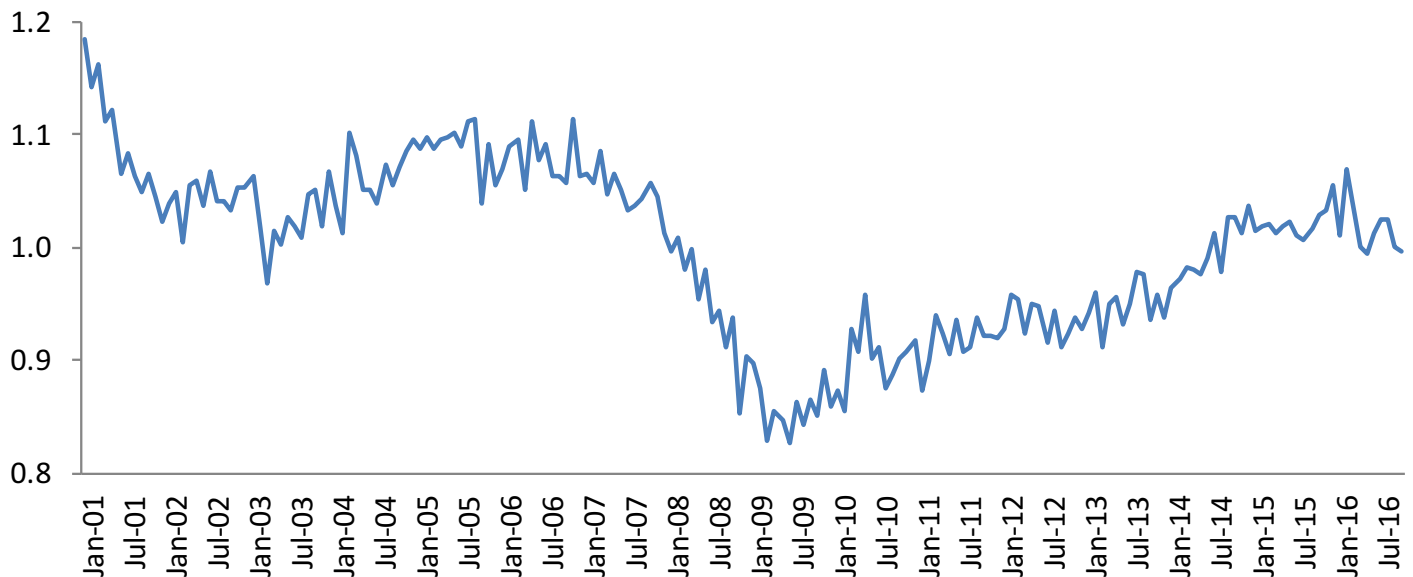


Short Term Unemployment is the number of persons unemployed for 26 weeks or less. The Quit Rate is rescaled to have the same mean and variance as the Vacancy-Unemployment Ratio from January 2001 to date. Non-Employment + PTER, an index developed by Hornstein, Kudlyak and Lange, reflects all persons who are not employed (weighted by labor force attachment) plus persons who are working part time for economic reasons and would prefer to work full time. Here, their index is multiplied by minus one and then rescaled to have the standard deviation as the Vacancy-Unemployment Ratio from January 2001 to date.

The **DHI-DFH Recruiting Intensity Index**, plotted in Figure III.3, was 1.00 in October, essentially unchanged from its revised level in September.

Figure III.3. DHI-DFH Index of Recruiting Intensity per Vacancy, January 2012 to October 2016

### DHI-DFH Index of Recruiting Intensity Per Vacancy, January 2001 to October 2016



Tables III.1 and III.2 below report industry-level statistics for mean vacancy duration and recruiting intensity per vacancy, respectively.

**Table III.1. DHI-DFH Measure of Mean Vacancy Duration by Industry and Time Period, No. of Working Days, January 2012 to October 2016**

Mean Vacancy Duration (Number of Working Days)									
By Industry and Time Period									
	2001 to 2003	2004 to 2006	2008	2009	2010 to 2012	2013	2014	2015	Jan.-Oct. 2016
Resources	12.0	14.0	18.1	13.5	18.7	17.3	22.5	16.5	13.5
Construction	7.9	8.8	7.3	4.3	6.1	9.5	10.9	11.5	15.7
Manufacturing	17.4	20.9	21.6	13.8	23.4	28.4	29.2	30.6	33.0
Wholesale and Retail Trade	14.2	15.8	15.5	13.1	15.9	19.8	18.6	20.6	23.2
Warehouse, Trans. & Utilities	18.6	17.0	20.6	11.3	18.2	22.5	23.9	28.0	28.3
Information	25.8	36.0	34.4	23.4	40.9	36.5	36.7	35.3	30.9
Financial Services	28.0	32.1	27.6	25.7	33.3	36.2	37.2	43.0	44.6
Professional and Business Services	18.3	19.9	21.3	16.6	18.8	19.6	21.9	26.5	26.3
Education	21.3	25.0	22.0	18.5	21.1	23.8	26.5	31.1	29.5
Health Services	39.1	35.8	36.4	29.8	33.5	34.6	38.4	45.0	47.7
Leisure and Hospitality	13.7	14.8	14.9	10.4	13.3	16.6	19.3	19.7	19.8
Other Services	22.5	18.6	25.2	16.9	18.9	20.1	20.9	22.0	28.4
Government	33.2	30.7	35.7	32.2	33.0	35.9	37.7	38.0	37.0
Non-Farm	19.3	20.0	21.1	16.6	20.0	22.5	24.1	26.8	28.1

**Table III.2. DHI-DFH Recruiting Intensity Index by Industry and Time Period, January 2012 to October 2016**

Recruiting Intensity Index									
By Industry and Time Period									
	2001 to 2003	2004 to 2006	2008	2009	2010 to 2012	2013	2014	2015	Jan.-Oct. 2016
Resources	0.99	1.06	1.05	0.70	1.00	0.98	1.04	0.92	1.00
Construction	1.07	1.04	0.89	0.90	1.01	0.94	0.89	0.88	0.86
Manufacturing	1.02	1.09	0.95	0.85	0.94	0.88	0.92	0.92	0.95
Wholesale and Retail Trade	1.05	1.10	0.96	0.84	0.89	0.94	1.04	1.04	1.03
Warehouse, Trans. & Utilities	0.96	1.13	0.94	0.92	0.96	1.01	1.11	1.10	1.04
Information	1.10	1.08	0.87	0.83	0.91	1.06	1.10	1.15	1.11
Financial Services	1.06	1.09	0.99	0.84	0.87	0.99	0.95	0.95	0.94
Professional and Business Services	1.08	1.07	0.90	0.83	0.94	0.96	1.00	1.01	1.00

Education	1.00	0.99	1.04	0.96	0.99	0.95	1.00	1.00	1.05
Health Services	1.08	1.04	1.01	0.93	0.89	0.92	0.96	1.01	0.99
Leisure and Hospitality	1.08	1.08	0.97	0.84	0.88	0.92	0.96	1.00	1.01
Other Services	1.02	1.07	0.94	0.96	0.95	0.98	0.96	1.04	0.95
Government	1.05	1.05	0.94	0.87	0.93	0.93	0.99	1.09	1.13
Non-Farm	1.05	1.08	0.95	0.86	0.92	0.95	1.00	1.02	1.02

#### IV. About the DHI Hiring Indicators

The creation of the **DHI Vacancy and Application Flow Database** is a cooperative effort between DHI Group, Inc. and two researchers at the University of Chicago, Professor Steven J. Davis and Brenda Samaniego de la Parra, a Ph.D. student. Their research paper on “Application Flows” contains additional information about the DHI Database and the analysis of the data in this report.

The **DHI-DFH Recruiting Intensity Index** quantifies the effective intensity of recruiting efforts per vacancy by employers with vacant job positions. The index is normalized to an average value of 1.0 for the period from January 2001 to December 2012. It complements the monthly [Job Openings Rate](#) produced by the U.S. Bureau of Labor Statistics (BLS) from the [Job Openings and Labor Turnover Survey](#).

The pace of new hires in the economy depends on the number and types of job seekers, the number and types of job vacancies, and employer actions that affect how quickly vacant jobs are filled. These actions include the choice of recruiting methods, expenditures on help-wanted ads, how rapidly employers screen job applicants, hiring standards, and the attractiveness of compensation packages offered to prospective new hires. The BLS Job Openings Rate captures the availability of job vacancies in the economy, while the **DHI-DFH Recruiting Intensity Index** captures the intensity of employer efforts to fill those vacancies. The index is available at the national, regional and industry levels and by establishment size class (number of employees).

The index construction follows the method developed by Steven J. Davis, R. Jason Faberman and John Haltiwanger (DFH) in “[The Establishment-Level Behavior of Vacancies and Hiring](#),” published in the May 2013 issue of the *Quarterly Journal of Economics*, and extended to industry and regional indices in “[Recruiting Intensity during and after the Great Recession: National and Industry Evidence](#),” published in the May 2012 issue of the *American Economic Review*.

The **DHI-DFH Vacancy Duration Measure** quantifies the average number of working days taken to fill vacant job positions. It supplements other measures often used to assess the tightness of labor market conditions such as the ratio of vacant jobs to unemployed workers.

Vacancy durations depend on the relative numbers of job seekers and job vacancies, the recruiting and search methods available to employers and job seekers, employer recruiting intensity per vacancy, the search intensity of job seekers, and the degree to which the requirements of jobs on offer match the skills, locations and preferences of job seekers. Other things equal, a larger ratio of job vacancies to job seekers yields longer vacancy durations.

The **DHI-DFH Vacancy Duration Measure** follows the method developed by Steven J. Davis, R. Jason Faberman and John Haltiwanger (DFH) in “[The Establishment-Level Behavior of Vacancies and Hiring](#),” published in the May 2013 issue of the *Quarterly Journal of Economics*. That method combines a simple model of hiring

dynamics with data on hires and vacancies from the [Job Openings and Labor Turnover Survey \(JOLTS\)](#) conducted by the U.S. Bureau of Labor Statistics. Using their model and the JOLTS data, DFH estimate an average daily job-filling rate for vacant job positions in each month. Taking the reciprocal of the daily job-filling rate yields the **DHI-DFH Vacancy Duration Measure**, which is available at the national, regional and industry levels and by establishment size class.

The average daily job-filling rate is closely related to the “vacancy yield,” the ratio of hires during the month to the stock of vacancies on the last business day of the previous month. Unlike the vacancy yield, however, the daily job-filling rate (and the **DHI-DFH Vacancy Duration Measure**) adjusts for job vacancies that are posted and filled within the month. Working days are defined as Mondays through Saturdays, excluding major national holidays.

### **About DHI Group, Inc.**

DHI Group, Inc. (NYSE: DHX) is a leading provider of data, insights and connections through our specialized services for professional communities including technology and security clearance, financial services, energy, healthcare and hospitality. Our mission is to empower professionals and organizations to compete and win through expert insights and relevant employment connections. Employers and recruiters use our websites and services to source and hire the most qualified professionals in select and highly-skilled occupations, while professionals use our websites and services to find the best employment opportunities in and the most timely news and information about their respective areas of expertise. For over 25 years, we have built our company on providing employers and recruiters with efficient access to high-quality, unique professional communities, and offering the professionals in those communities access to highly-relevant career opportunities, news, tools and information. Today, we serve multiple markets located throughout North America, Europe, the Middle East and the Asia Pacific region.

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