

FOR IMMEDIATE RELEASE

Contact: Bill Reynolds (billr@footepartners.com) Ted Lane (tlane@footepartners.com)
772-234-2787

Average market value for 613 non-certified tech skills declined in the first quarter of 2021, with 220 changing in value from the prior quarter—well above the average quarterly price volatility in 2020 calendar year.

540 tech certifications continued their nearly three-year steady decline in quarterly average market value, now at its lowest point since early-2013.

With COVID-19 continuing to profoundly reorder the tech labor landscape, many areas of transformation and growth are being exploited by employers after years of uneven efforts at managing change.

NOTE: This news release is a summary extract of content from the 1st Quarter 2020 update edition of Foote Partners' **2021 IT Skills Demand and Pay Trends Report** and **2021 IT Skills and Certification Volatility Index**, two market intelligence trend reports updated every 3 months from data contributed by 3,745 U.S. and Canadian employers. It contains IT jobs, skills and certifications data trends published in the firm's **IT Skills and Certifications Pay Index™** and deep-dive supply/demand benchmark and empirical research from Foote Partners field interviews.

Vero Beach, FL – May 17, 2021 - Extra pay awarded by employers to talented tech professionals for **613 non-certified tech skills**—also known as cash pay premiums—declined on average in the first three months of 2021 for the second consecutive quarter. **This is only the second quarterly loss in two years.** Currently averaging the equivalent of 9.4 percent of base salary on average for a single non-certified skill, this is just shy of the highest average premium in 20 years.

For **540 tech certifications**, average market values decreased for the eleventh consecutive quarter, down 0.4 percent overall, currently earning the equivalent of 6.7 percent of base salary on average for a single certification. **That's the lowest average pay premium for IT certifications in 7 years.**

This according to the latest quarterly update of Foote Partners' *IT Skills and Certifications Pay Index™* (ITSCPI) based on compensation data provided by 3,745 private and public-sector employers in 83 U.S. and Canadian cities who partner with the firm to report pay for their 339,868 technology professionals in the U.S. and Canada.

Since its launch in 1999, the *IT Skills and Certifications Pay Index™* has continuously tracked cash pay premiums paid to tech professionals by their employers for an ever-increasing number of popular tech skills and certifications. Rigorously validated data and detailed market analyses are updated and published by Foote Partners every 90 days. Currently, premiums are reported for 1,153 certifications and non-certified skills.

Pay Performance, 3/12/24/24/36 months Certified vs. Non-certified Tech Skills

(83,274 IT professionals, data through 4/1/2021)

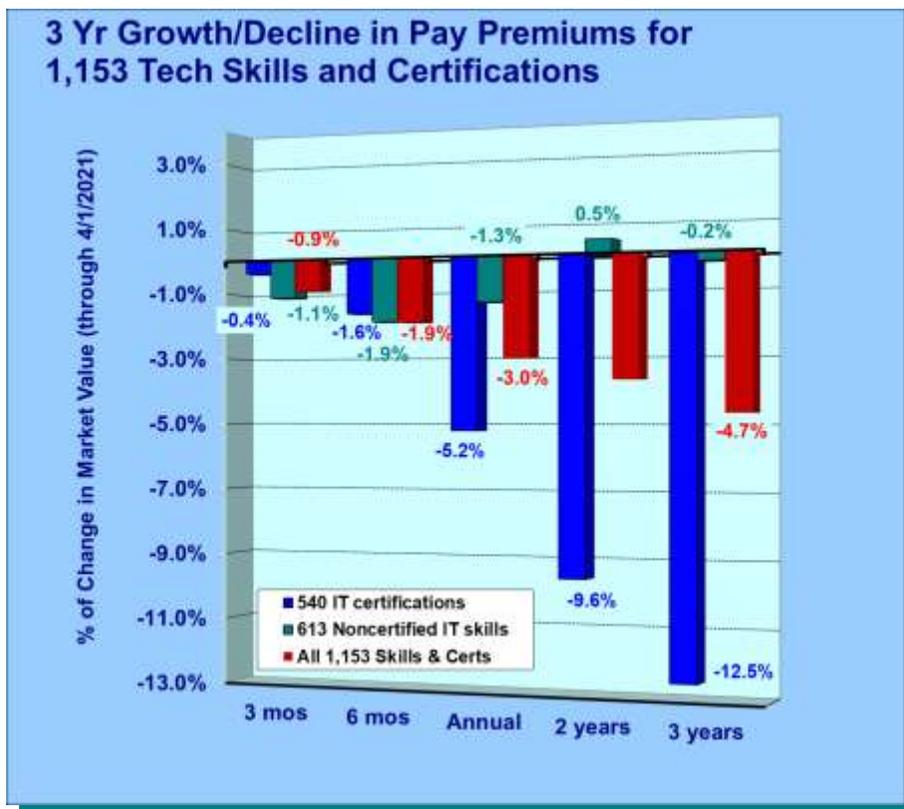
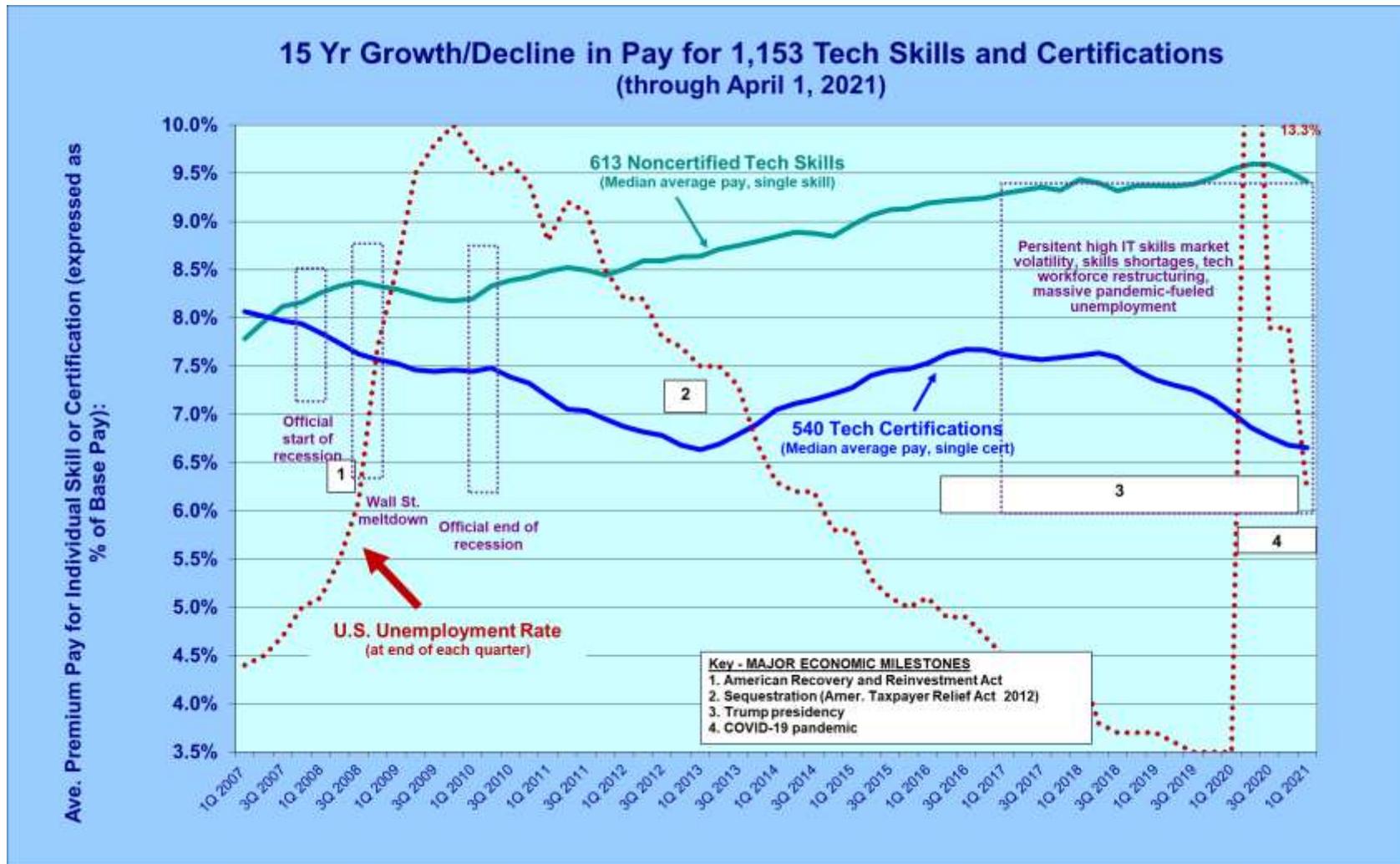


Figure 1

Source: Foote Partners, *IT Skills and Certifications Pay Index™* (1Q2018 – 1Q2021 datasets)

MULTI-YEAR PAY PREMIUM TRENDS: Certified versus Noncertified IT Skills

Average median cash pay premiums for a single certified or non-certified IT skill. 83,274 IT Professionals



Pay data supporting these charts available in the [IT Skills and Certifications Pay Index™](#) - 1Q 2021 data edition

IT Skills & Certifications Pay Data Trend Charts & Analysis

IT Skills and Certifications Pay Index™ – 1st Quarter 2021 data edition

(Data collected through April 1, 2021)

- **Noncertified IT Skills** (Page 6)
- **IT Certifications** (Page 24)
- **IT Skills & Certifications Volatility Index™** (Page 40)

How to interpret gains and losses in IT skills and certifications pay premiums

Quarterly gains and losses in premium pay reflect a widening or narrowing, respectively, in the gap between supply and demand for skills and certifications. This may occur for any number of reasons. For example, a quarterly decline in pay for a skill may signal that the market supply of talent for that skill is catching up to demand—not necessarily that demand is starting to wane. IT professionals are often attracted to a skill or certification if they perceive that it has rising value in the marketplace and therefore can help them to achieve higher pay, greater job security, a promotion, or more flexibility in their career choices. As they pursue greater competency in that skill or as more workers attain certification, supply increases and market pricing (which is elastic to the laws of supply and demand) will be driven downward unless demand is rising at the same proportional rate. Conversely, if demand rises and supply is not increasing to match that level of demand, pay premiums for specific skills and certifications will increase.

Therefore, when interpreting gains and losses in market pay it is important to consider all factors that could be driving supply and demand and market perception. Those factors range from:

- aggressive marketing of certifications by vendors;
- changes in certification programs (e.g., certification extensions or retirement);
- new technology and evolution/maturation of current technologies;
- technology adoption rate;
- product integration strategies,
- economic conditions;
- employment opportunities;
- mergers/acquisitions;
- budget cycles and the timing of skills and talent acquisition by employers;
- changes in labor sourcing plans pursuant to company strategies.

Non-certified IT Skills Data Trend Charts & Analysis

(Data collected through April 1, 2021)

613 Non-Certified IT Skills Reported

Foote Partners News Release – May 17, 2021

Apps Dev. Tools/Platforms

Agile software development
Amazon Kinesis
Amazon Web Services
Apache Airflow
Apache Ant
Apache Camel
Apache Cloudstack
Apache Cordova
Apache Flex
Apache Hadoop
Apache Lucene
Apache Maven
Apache Pig
Apache Spark
Apache Struts/Struts2
Apache Tomcat
Apache Zookeeper
Appium
Automated Testing
AWS CloudFormation
AWS Lambda
Bamboo
Behavior-Driven Development
Bitbucket
Boost C++
Business Objects
C
C#
C++
C++ /CLI
CA PPM (Clarity PPM)
Cerner Millennium
Clojure
Cloudera software
Cloud Foundry PaaS
Cobol
Cognos
Confluence
Cucumber
Delphi
Drupal
Eclipse
Elixir
Epic Systems applications
Erlang
Ethereum
F#
Git/GitHub

GitLab
Go language (Golang)
Gosu/Guidewire
Gradle
Groovy/Grails
Grunt
Hibernate/NHibernate
HP ALM (App. Lifecycle Mgt)
HP Unified Functional Testing
Integration Testing
iRise
Jasmine
Java SE/Java EE
JBehave
Jenkins
JIRA
JUnit
Kotlin
MapReduce
MATLAB
Microsoft Azure
Microsoft SQL Server Mgt Studio
Microsoft Team Foundation Server
NetWeaver
Next.js
Nim
JUnit
Objective-C
Objective Caml (Ocaml)
OpenShift
Oracle APEX
Oracle Apps Developer Framework
PL/SQL
Powerbuilder
Progress 4GL/Development tools
R language
Red Hat Fuse
Rstudio
Ruby
Ruby on Rails
Rust
SaaS
SAS
Scala
Scrum
Selenium
ServiceNow ITSM
SPSS
SQL

Swift
Tcl
TestNG
Transact-SQL/tSQLt
UML (unified modeling language)
Visual Basic 6.0
Visual C++
WebSphereMQ
Xcode

SAP & Enterprise Bus. Apps.

ABAP (all modules)
Baan
Enterprise Application Integration (EAI)
IBM Sterling
J.D. Edwards /Oracle
Lawson
Microsoft Dynamics/Dynamics 365
NetWeaver
NetWeaver Portal (SAP EP)
Oracle BPM
Oracle CRM
Oracle E-Business suite
Oracle Eloqua
Oracle ERP
Oracle Financials
Oracle HFM (Hyperion Fin. Mgt)
Oracle HRMS
Oracle NetSuite
Oracle Payables
Oracle Payroll
Oracle Retail
Oracle SCM
Oracle SOA Suite
Pega
PeopleSoft (CRM/Financials/HCM)
Remedy ITSM
Salesforce
Salesforce Sales Cloud
Salesforce Service Cloud
Accelerated SAP (SLM)
SAP AFS
SAP ALE
SAP APO
SAP Auto-ID infrastructure
SAP Basis Components
SAP BI Accelerator
SAP BODI

SAP Data Services (SAP BODS)
SAP BOXI (aka Crystal Reports)
SAP BPC
SAP BSP
SAP Business One
SAP Business Workflow/Webflow
SAP CA
SAP CAF
SAP CAR
SAP CCM
SAP CE
SAP CFM
SAP CO
SAP CO-PA
SAP CRM
SAP Crystal Reports
SAP CS
SAP Digital Banking
SAP EBP
SAP EDI
SAP EHS
SAP EPM
SAP ERP
SAP ESA
SAP Exchange Infrastructure (XI)
SAP FI (Financial Accounting)
SAP FI – CA
SAP FI - CO
SAP FI – FSCM
SAP FI - Travel Management
SAP Fiori
SAP F&R
SAP FS (Insurance)
SAP GRC
SAP GTS
SAP HANA
SAP HCM (SAP HR)
SAP HCM ESS/MSS
SAP HR-PA
SAP Hybris
SAP IBP (Integrated Business Planning)
SAP IS-U (Utilities)
SAP ITS
SAP Leonardo
SAP LES
SAP LO
SAP Lumira
SAP Manufacturing
SAP MDG (Master Data Governance)

SAP MDM
SAP MDX
SAP MI
SAP MII
SAP MM
SAP MRO
SAP MRS
SAP Netweaver Applications Server
SAP Netweaver BW (BIW)
SAP NetWeaver Visual Composer
SAP NWDI
SAP NWDS
SAP Oil & Gas
SAP PI
SAP PLM
SAP PM
SAP POSDM
SAP PP
SAP PS
SAP PSCD
SAP Public Sector Management
SAP PY (Payroll)
SAP QM
SAP for Retail
SAP Service & Asset Mgt
SAP S/4HANA
SAP SCM
SAP SD
SAP SD - GTS
SAP Security
SAP SEM
SAP SM
SAP Smart Forms
SAP Solution Manager
SAP SRM
SAP TM
SAP UI5 (UI development toolkit for HTML5)
SAP Web Application Server
SAP WEBI
SAP WM
SAP WM – EWM
SAP Xcelsius
Siebel/Siebel Analytics
Software AG webMethods
SuccessFactors
Web Dynpro
Workday HCM

613 Non-Certified IT Skills Reported

Foote Partners News Release – May 17, 2021

Web/e-Commerce Development

Active Server Pages
ActiveX
Adobe Experience Manager
Ajax
Amazon Cloudwatch
AngularJS
Apache Solr
Apache web server
Apache Velocity
Apache Wicket
Apex Code
Backbone.js
CGI
Cold Fusion MX
Content management systems
CSS/CSS3
Django
Docker /Docker Swarm
Documentum
Elasticsearch
Ember.js
Front End Development
GatsbyJS
Google Analytics
Google App Engine
Google Cloud Platform
HTML5
JavaBeans/EJB 3.0
JavaFX
JavaScript
Java Server Pages
JBoss/Wildfly
Jetty
Joomla!
jQuery
JSON
Julia
KnockoutJS
Laravel PHP
Magento
Magnolia
Microsoft .NET
Microsoft BizTalk Server
Microsoft Commerce Server
Microsoft Identity Integration Server
Microsoft Internet Information Services

Microsoft Forefront Threat Management Gateway (formerly ISA)
Microsoft SharePoint/SharePoint Server
Microsoft Silverlight
Microsoft Visual Studio
Mobile applications development
Mule/MuleESB
Node.js
Oracle Fusion
Oracle WebLogic/
Oracle Workflow
Pandas
Perl
PHP (all)
Python
React
Redux
REST
RESTful
SailPoint
Scalable Vector Graphics (SVG)
Secure software development/coding
Sitecore CMS
SOAP
Social Media/Networks
Spring Framework
Spring Boot
Spring Cloud
Spring Integration
Spring MVC
Spring Security
TIBCO
UDDI
Umbraco
VBScript
Video/graphics editing
Visual Interdev
VoiceXML
Web collaboration appliances
Web Content Development
Web Design
WebSphere
WebSphere Datapower
Wikis
WSDL
XAML/XACML
XHTML MP
XML (all variants)

Management, Methodology and Process

Artificial Intelligence
Azure Machine Learning
Big Data Analytics
Bioinformatics
Business Analysis
Business Analytics
Business intelligence
Business performance management
Business process anagement/
modeling/improvement
Caffe
Capacity Planning/Management
Change management
COBIT
Collaboration software
Complex Event Processing/Event
Correlation
Configuration Management
Continuous Improvement
Continuous Integration
CRM
Cryptography (encryption, VPN)
Cybersecurity
Cyber Threat Intelligence
Data Acquisition and Control Systems
Data Analytics
Data Architecture
Data Cleansing
Data Engineering
Data Governance
Data Integration
Data Management
Data Mining
Data Modelling
Data Privacy
Data Protection
Data Quality
Data Science
Data Security
Data Strategy
Data Transformation
Data Visualization
Deep Learning
DevOps
DevSecOps
Digital Analytics

Digital Forensics
Digital Marketing
eDiscovery
E-Procurement
ERP
Flink
Functional Programming
Functional Testing
Game Development
General Data Protection Regulation (GDPR)
Google TensorFlow
HL7
Identity and access management
Incident Management
Information management
IT Audit
IT Governance
ITIL V3
Kanban
Keras
Machine Learning
Marketo
Metadata design and development
Microservices
Microsoft SQL Server Analysis Services
Microsoft Visio
Natural language processing
Network Architecture
Neural Networks
NIST
Penetration testing
Power BI
Predictive Analytics and Modeling
Prescriptive Analytics
Program Management
Project management/governance
PyTorch
QlikView
Quality Assurance/QA Automation
Quality management/TQM
Quantitative Analysis/Regression Analysis
Razor
Requirements Engineering/Analysis
Risk analytics/assessment
Risk management
Robotic Process Automation
Security architecture and models
Security auditing

Security management
Security testing
SEO
Service Management
Site Reliability Engineering
Six Sigma/Lean Six Sigma
Splunk
Social media analysis/analytics
Software development lifecycle
management
Tableau
Test automation
Test Driven Development/Scripting
TIBCO ActiveMatrix BusinessWorks
TOGAF (Enterprise Architecture)
Usability Research/Human Factors
Research
User Acceptance Testing
User Experience/Interface Design
Vulnerability Scanning/Assessment/
Management
Waterfall
Web Analytics
Webtrends analytics
Zachman Framework

Messaging & Communications

ActiveMQ
Apache Kafka
HCL Domino
Java Messaging Service
Message-oriented Middleware (Wave,
XMPP/Jabber, etc.)
Microsoft Exchange
Novell Groupwise
Oracle Comm Messaging Server
RabbitMQ
TIBCO Enterprise Message Service
TIBCO Rendezvous
Unified Communications/Messaging

613 Non-Certified IT Skills Reported

Foote Partners News Release – May 17, 2021

Systems/Networks

Active Directory
Amazon Elastic Kubernetes Service
Ansible
Apache Flume
Arista
ATM
Azure Active Directory
Azure Logic Apps
Business continuity and disaster recovery planning
CA Endeavor
Chef/Opencode
Cisco ASA
Cisco CUCM
Cisco ICM
Cisco IPCC
Cisco ISE/Identity Services Engine
CiscoNexus
Cisco Prime
Cisco UCCE
Cisco UCCX
Citrix Hypervisor (XenServer)
Citrix Virtual Apps (XenApp)
Cloud architecture
Cloud security
DHCP
EIGRP
Ethernet
Fast Ethernet
Gigabit Ethernet
HP ConvergedSystem
HP Quality Center
HTTPS
IaaS (Infrastructure as a Service)
Infrastructure architecture
Intrusion prevention/detection sys
IPX/SPX
Juniper
Kubernetes
LAN
Microsoft Application Virtualization
Microsoft Hyper-V
Microsoft SCCM
Microsoft SCVMM
Microsoft Virtual Server
Mobile device management
Mobile security

Multiprotocol Label Switching
NAS/Network Attached Storag
Network access control/Identity mgt systems
Network security management
Novell Netware
PaaS
Performance Analysis/Tuning
Performance management/metrics
Performance Testing
Prometheus
Puppet
Rackspace Cloud
RedHat OpenShift
Routing (e.g., OSPF)
Salt
SAN/Storage Area Networks
Security skills (project-based)
Security Information and Event Management (SIEM)
SMTP
SNA
SolarWinds
Storage virtualization/administration
TCP/IP
Terraform
Tivoli
Vagrant
vCloud
Virtualization (various)
Virtual security
VMware ESXi Server
VMware NSX
VoIP/IP telephony
VPN/OpenVPN
WAN/3G/4G services
Web Infrastructure
Web services security
Wireless Network Mgmt
Wireless security
Wireless sensors/RFID
Wireline Networking/Telecomm.
WML

Data/Database

Amazon Athena
Amazon DynamoDB
Amazon RedShift
Apache Cassandra
Apache CouchDB
Apache Hive
Azure Cosmos DB
Azure Data Factory
Azure SQL Database
Azure Synapse Analytics
Base SAS
Big Data
Blockchain
Cloudera Impala
Couchbase Server
Data mining
Data security
Database management
DB2
dBASE/xBASE
ETL (Extract, transform, load)
GIS
Google Big Query
Hbase
Informatica
Java Database Connectivity
Master data management
Microsoft Access
Microsoft Exchange Server 2007/2010/2013
Microsoft SQL Server Integration Services
Microsoft SQL Server 2016/2014/2012/2008
MongoDB
MySQL
NewSQL
NoSQL
OpenEdge ABL
Oracle Application Server
Oracle Business Intelligence Enterprise Edition Plus
Oracle Coherence
Oracle DB 9i/10g/11i/12c
Oracle Enterprise Manager
Oracle Exadata
Oracle Forms
Oracle Reports

PostgreSQL
Redis
Riak
Smart Contracts
Sqoop
Sybase Adaptive Server
Teradata
TIBCO Spotfire
Visual SQL

Operating Systems

AIX
Apache Cloudstack
CoreOS
HP-UX
Linux
Mac OS X
Mobile operating systems (iOS, Android)
OpenStack
Red Hat Enterprise Linux
Solaris
SUSE
Unix (all)
VMware vSphere
Windows 8/10
Windows NT
Windows Server 2008/2012

IT NON-CERTIFIED SKILLS PAY SUMMARY – Through April 1, 2021

A. NON-CERTIFIED TECH SKILLS PAY PERFORMANCE: By Category

NON-CERTIFIED TECH SKILLS. 220 non-certified tech skills changed cash market value in the first three months of 2021 compared to 234 in the prior quarter. Average cash pay premium for **613 non-certified skills** declined by 1.1%, only the third quarter in two years this has occurred. Pay performance from January to March was lower for all but one of the eight non-certified tech skills categories reported.

**Noncertified IT Skills - % Growth/Decline
3 months & 12 months**

(613 skills, data through 4/1/2021)

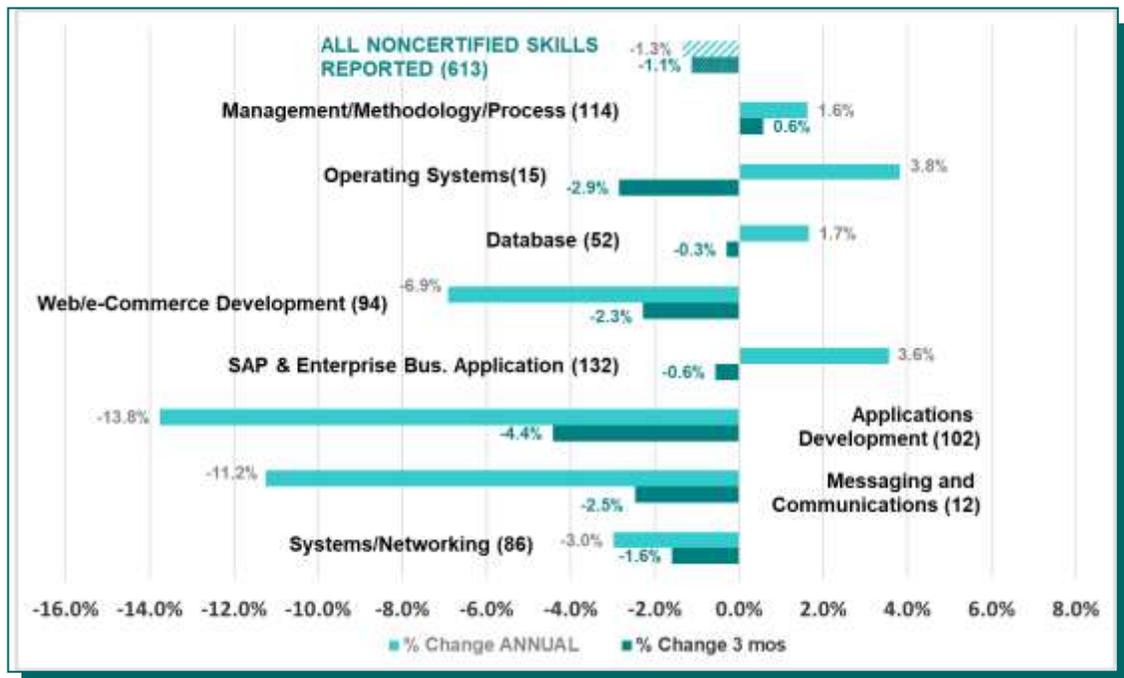
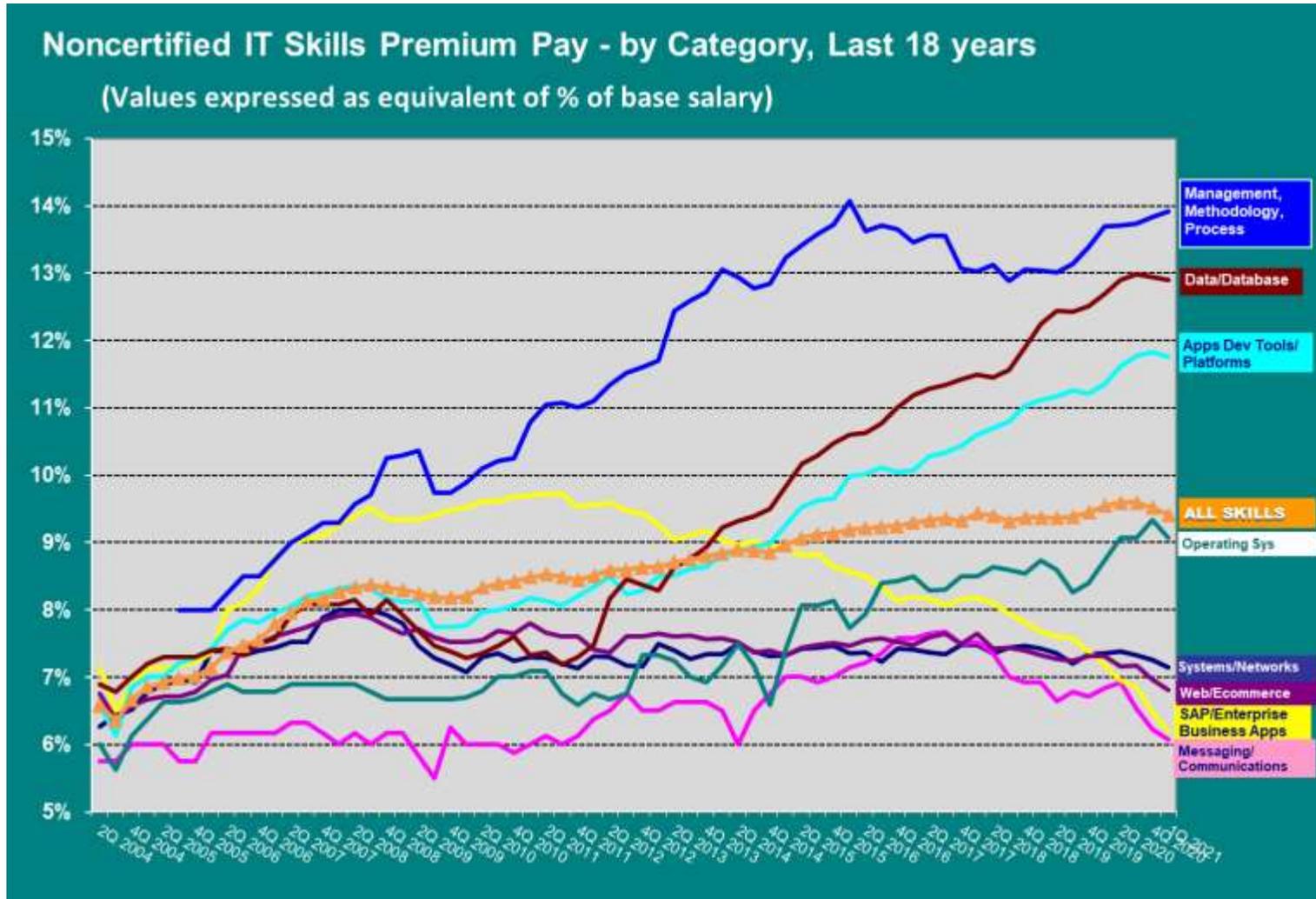


Figure 2

Source: Foote Partners [IT Skills & Certifications Pay Index™](#), 1st Quarter 2021 data

18-YEAR QUARTERLY NON-CERTIFIED IT SKILLS PAY TRENDS BY CATEGORY

Average quarterly median cash pay premium for a single non-certified IT skill. Data through April 1, 2021 – 83,274 IT Professionals



Pay data supporting these charts available in the [IT Skills and Certifications Pay Index™](#) – 1Q 2021 data edition

NON-CERTIFIED IT SKILLS TREND HIGHLIGHTS: Market Value Gainers & Highest Paying – 1st Quarter 2021 data

These noncertified tech skills *gained 10% or more in market value in the three months ending April 1, 2021* vs. prior quarter (seen below grouped by segment). *Listed in descending order* of amount of % gain or cash pay premium (including ties). Highest paying skills listed on right *in alphabetical order*.

TECH SKILLS (noncertified)			Highest Paying – Cash Premiums (A-Z)
<p><u>Applications Development skills</u> Apache Cloudstack Delphi Cobol Apache Camel Apache Pig Microsoft SQL Server Management Studio (SSMS)</p> <p><u>Database Skills</u> Couchbase Server Oracle Enterprise Manager Blockchain</p> <p><u>Messaging/Comm. skills</u> Unified communications/messaging HCL Domino</p> <p><u>Operating System skills</u> Mobile operating systems (iOS, Android, etc.) Red Hat Enterprise Linux</p>	<p><u>Systems/Networking skills</u> Cisco CUCM HTTPS Business continuity and disaster recovery planning Cisco UCCX Prometheus Cisco UCCE</p> <p><u>Management, Process & Methodology skills</u> E-Discovery Risk analytics/assessment Razor</p> <p><u>SAP & Enterprise Business Applications skills</u> SAP IBP (Integrated Business Planning) Oracle CRM SAP Exchange Infrastructure (XI) SAP BSP (Business Server Pages) SAP Business Workflow/Webflow SAP HANA (In-Memory Analytics Appliance) SAP CAR (Customer Activity Repository) Oracle Retail</p>	<p><u>Web/SOA/E-Commerce skills</u> Ember.js Backbone.js Active Server Pages CGI XAML/XACML Jetty JBoss /WildFly</p>	<ul style="list-style-type: none"> • Apache Pig • Blockchain • Cryptography (encryption, VPN, SSL/TLS, Hybrids) • Data Architecture • Deep Learning • DevSecOps • E-Discovery • Ethereum • Flink • Functional Testing • Identity and access management • Natural language processing • PyTorch • Risk analytics/assessment • Security architecture and models • Site Reliability Engineering • Smart Contracts • TIBCO Spotfire
<p>Source: Foote Partners IT Skills & Certifications Pay Index™, 1st Quarter 2021 data edition</p>			

NON-CERTIFIED IT SKILLS TREND HIGHLIGHTS: **Market Value Losers** – 1st Quarter 2021 data

These noncertified IT skills **declined 10% or more in market value in the three months ending April 1, 2021** (grouped by segment).
Listed in descending order of amount of % decline, including ties.

TECH SKILLS (Noncertified)

Applications Development skills

Boost C++
Apache Zookeeper
Apache Ant
CA PPM(Clarity PPM)
RStudio
Tcl
Oracle Applications Developer Framework
Objective Caml (Ocaml)
PowerBuilder
Visual Basic 6.0
Erlang
Visual C++

Data/Database

Sybase Adaptive Server Enterprise
NewSQL
Sqoop
Master data management
Apache CouchDB
Data mining

SAP & Enterprise Business Applications skills

J.D. Edwards (Oracle)
SAP Leonardo
SAP FI - FSCM
SAP PM
SAP SRM
Web Dynpro
SAP BODI
SAP WEBI
SAP BusinessObjects Dashboards (Xcelsius)
SAP NWDI
SAP CCM
SAP CE
SAP CS
SAP EBP
SAP MII
SAP MRS
SAP Web Application Server
SAP Hybris
SAP MDM
SAP Point-of-Sale Data Management
SAP Business One
SAP NWDS
SAP PLM
SAP BOXI
SAP SEM
SAP SM

SAP TM
SAP Forecasting and Replenishment
SAP Fiori
Oracle Eloqua
SAP EHS
SAP PS
SuccessFactors
SAP BI (SAP BW)
SAP FS
SAP BPC
SAP MM
SAP ERP Operations (multi-skills)
SAP CO
SAP FI
SAP PP
SAP GTS
SAP APO
SAP S/4HANA
SAP GRC

Management, Process & Methodology

Marketo
Six Sigma/Lean Six Sigma
TIBCO ActiveMatrix BusinessWorks
Quality management/TQM
Social media analysis/analytics
Neural Networks

Systems/Networking skills

Storage virtualization/administration
Apache Flume
vCloud
Rackspace Cloud
Routing (e.g. OSPF, RIP, IGRP)
Citrix Virtual Apps (XenApp)
SolarWinds
Juniper
Microsoft Hyper-V
Microsoft SCCM
VMware ESXi Server
Microsoft Application Virtualization
Cisco ASA
Multiprotocol Label Switching (MPLS)
Wireless sensors/RFID
EIGRP
Salt
Cisco ISE (Identity Services Engine)

Messaging & Communications skills

Microsoft Exchange
Oracle Communications Messaging Server
Message-oriented Middleware (Wave, XMPP/Jabber, etc.)
Apache Kafka

Source: Foote Partners [IT Skills & Certifications Pay Index™](#), 1st Quarter 2021 data edition

NON-CERTIFIED IT SKILLS TREND HIGHLIGHTS: Market Value Losers – cont’d.

These noncertified IT skills **declined 10% or more in market value in the three months ending April 1, 2021** (grouped by segment).
Listed in descending order of amount of % decline, including ties.

TECH SKILLS (Noncertified)

Web/E-commerce Development skills

ActiveX
 JavaBeans/EJB 3.0
 Microsoft Commerce Server
 Magnolia
 UDDI (Universal Description, Discovery and Integration)
 VoiceXML
 WebSphere Datapower
 Laravel PHP
 Microsoft Identity Integration Server (MIIS)
 CSS/CSS3
 Microsoft Visual Studio
 Microsoft BizTalk Server
 Front End Development
 Java Server Pages
 JavaScript
 Mobile applications development
 Mule/MuleESB
 Docker/Docker Swarm
 Google Cloud Platform
 Apache Velocity
 Oracle Workflow
 Spring Framework (Batch, Boot, Cloud, etc.)

Operating Systems

HPUX
 Windows 10
 Mac OS X
 VMware vSphere

Source: Foote Partners [IT Skills & Certifications Pay Index™](#), 1st Quarter 2021 data edition

NON-CERTIFIED IT SKILLS ANALYSIS – Pandemic Winners

A. NON-CERTIFIED TECH SKILLS EARNING HIGH PAY---AND STILL GROWING IN VALUE

The following non-certified tech skills meet two prerequisites:

- They are **earned workers cash pay premiums well above the average** of all 613 skills reported in our *IT Skills and Certifications Pay Index™*
- They **recorded gains in cash market value in the six months** ending April 1, 2021.

No skill below is earning less than the equivalent of 16 percent of base salary—significant considering the average for all skills reported is 9.6 percent of base—and are listed in descending ranked order of cash premium and market value increases (including ties). Not surprising, the list contains a number of security, risk, data management and analytics, blockchain, other currently hot tech skills.

1. Risk analytics/assessment

Average Pay Premium: 19 percent of base salary equivalent

Market Value Increase: 11.8 percent (in the six months through April 1, 2021)

Risk analytics is a form of business intelligence that serves as a component in a risk management environment. Invaluable in any industry, risk analytics exploits internal and external structured and unstructured data to model scenarios and outcomes, providing insights into areas such as:

- Fraud risk
- Market risk
- Credit risk
- Transportation and logistics risk
- IT risk
- Financial risk
- Investment risk
- Supply chain risk

Risk analytics does not have to be a digital solution, and indeed, businesses have been analyzing and assessing risk for years using manual or semi-automated methods. But digital risk analytics is growing in popularity as a niche of BI development due to increased interest among risk-management professionals. As a discipline it has changed—and vastly improved—the way risk managers evaluate potential scenarios and predict risk-laden events.

Digital risk analytics minimizes the need for reliance on human intuition, allows enterprise-wide assessment of risk exposure, and enables management precision, which would have been unimaginable not so long ago. Capturing, storing, and extracting data relating to all the risk strands in a particular business environment enables risk managers to amass targeted intelligence, visualize scenarios, and prepare for them. The resulting insights provide an organization with a plethora of benefits to security, operational continuity, and competitive advantage.

Machine learning technology is probably the biggest game-changer in digital risk analytics, primarily due to its ability to reduce the margins of error in predicting risk likelihoods and severities. When a cognitive solution, powered by the latest in artificial intelligence, creates a risk alert, human verification requirements still exist. However, as risk specialists increasingly weed out false positives and update the algorithms, the application learns from the inputs and becomes more accurate in evaluating the risk of fraud. Additional accuracy comes with AI technology's ability to process unstructured data using natural language processing, text analysis, and image recognition. That makes the need for rule-based analysis far less prominent and enables near real-time risk identification—and ultimately, faster responses.

Of late, risk analytics applications are beginning to cross the boundaries of prediction into more actionable realms of prescriptive analysis. The most sophisticated solutions help risk managers to identify the best course of action to prevent, circumvent, or at least mitigate potential harm arising from disruptive events and criminal activity.

NON-CERTIFIED IT SKILLS ANALYSIS – Pandemic Winners, cont'd.

2. DevSecOps

Average Pay Premium: 19 percent of base salary equivalent

Market Value Increase: 5.6 percent (in the six months through April 1, 2021)

DevOps is a set of practices that combines software development (*Dev*) and IT operations (*Ops*). It aims to shorten the systems development life cycle and provide continuous delivery with high software quality. But DevOps isn't just about development and operations teams: If you want to take full advantage of the agility and responsiveness of a DevOps approach, *IT security* must also play an integrated role in the full life cycle of your apps. Why? Because effective DevOps ensures rapid and frequent development cycles (sometimes weeks or days), but outdated security practices can undo even the most efficient DevOps initiatives.

Now, in the collaborative framework of DevOps, security is a shared responsibility integrated from end to end. It's a mindset that has led to the term *DevSecOps* to emphasize the need to build a security foundation into DevOps initiatives. It means thinking about application and infrastructure security from the start. It also means automating some security gates to keep the DevOps workflow from slowing down. Selecting the right tools to continuously integrate security, like agreeing on an integrated development environment (IDE) with security features, can help meet these goals. However, effective DevOps security requires more than new tools—it builds on the cultural changes of DevOps to integrate the work of security teams sooner rather than later.

In DevSecOps, two seemingly opposing goals — “speed of delivery” and “secure code” — are merged into one streamlined process. In alignment with lean practices in agile, security testing is done in iterations without slowing down delivery cycles. Critical security issues are dealt with as they become apparent, not after a threat or compromise has occurred. There are six important components to a DevSecOps approach:

- *Code analysis* – deliver code in small chunks so vulnerabilities can be identified quickly.
- *Change management* – increase speed and efficiency by allowing anyone to submit changes, then determine whether the change is good or bad.
- *Compliance monitoring* – be ready for an audit at any time (which means being in a constant state of compliance, including gathering evidence of GDPR and PCI compliance, etc.).
- *Threat investigation* – identify potential emerging threats with each code update and be able to respond quickly.
- *Vulnerability assessment* – identify new vulnerabilities with code analysis, then analyze how quickly they are being responded to and patched.
- *Security training* – train software and IT engineers with guidelines for set routines

3. Blockchain

Average Pay Premium: 18 percent of base salary equivalent

Market Value Increase: 20 percent (in the six months through January 1, 2021)

Based on a peer-to-peer (P2P) topology, **blockchain** is a distributed ledger technology (DLT) that allows data to be stored globally on thousands of servers – while letting anyone on the network see everyone else's entries in near real-time. That makes it difficult for one user to gain control of, or game, the network and to change, hack, or cheat the system. For businesses, blockchain holds the promise of transactional transparency: the ability to create secure, real-time communication networks with partners around the globe to support everything from supply chains to payment networks to real estate deals and healthcare data sharing. Because businesses run on information, the faster it's received and the more accurate it is, the better.

Blockchain is ideal for delivering that information because it provides immediate, shared and completely transparent information stored on an immutable ledger that can be accessed only by permissioned network members. A blockchain network can track orders, payments, accounts, production and much more. And because members share a single view of the truth, you can see all details of a transaction end-to-end, giving you greater confidence, as well as new efficiencies and opportunities.

NON-CERTIFIED IT SKILLS ANALYSIS – Pandemic Winners, cont'd.

An annual survey of blockchain service providers by research analyst firm Gartner revealed that 14% of enterprise blockchain projects moved into production in 2020, up from 5% in 2019. Moreover, bitcoin market value—perhaps blockchain's most well-known use case—reached all-time highs in the last few months as mainstream investors have embraced it. Understanding how Blockchain integrates with IoT, Artificial Intelligence, Machine Learning, Robotics, and other technologies is a plus now for architects but will be a requirement in the future as these other technologies mature and adoption rates increase.

4. Smart Contracts

Average Pay Premium: 18 percent of base salary equivalent

Market Value Increase: 5.9 percent (in the six months through April 1, 2021)

Smart contracts help you exchange money, property, shares, or anything of value in a transparent, conflict-free way while avoiding the services of a middleman. They're the product of the decentralized ledger systems that run the blockchain and so skills in smart contracts are being catapulted along with Ethereum and others for an almost unlimited number of uses ranging from financial derivatives to insurance premiums, breach contracts, property law, credit enforcement, financial services, legal processes and crowdfunding agreements.

5. E-Discovery

Average Pay Premium: 17 percent of base salary equivalent

Market Value Increase: 30.8 percent (in the six months through April 1, 2021)

Electronic discovery (also called e-discovery or ediscovery) refers to any process in which electronic data is sought, located, secured, and searched with the intent of using it as evidence in a civil or criminal legal case. E-discovery can be carried out offline on a particular computer or it can be done in a network. Court-ordered or government sanctioned hacking for the purpose of obtaining critical evidence is also a type of e-discovery.

The nature of digital data makes it extremely well-suited to investigation. For one thing, digital data can be electronically searched with ease, whereas paper documents must be scrutinized manually. Furthermore, digital data is difficult or impossible to completely destroy, particularly if it gets into a network. This is because the data appears on multiple hard drives and digital files, even if deleted, can be undeleted. In fact, the only reliable way to destroy a computer file is to physically destroy every hard drive where the file has been stored.

In the process of electronic discovery, data of all types can serve as evidence. This can include text, images, calendar files, databases, spreadsheets, audio files, animation, Web sites and computer programs. Even malware such as viruses, trojans and spyware can be secured and investigated. Email can be an especially valuable source of evidence in civil or criminal litigation because people are often less careful in these exchanges than in hard copy correspondence such as written memos and postal letters.

Computer forensics, also called cyberforensics, is a specialized form of e-discovery in which an investigation is carried out on the contents of the hard drive of a specific computer. After physically isolating the computer, investigators make a digital copy of the hard drive. Then the original computer is locked in a secure facility to maintain its pristine condition. All investigation is done on the digital copy.

E-discovery is an evolving field that goes far beyond mere technology. It gives rise to multiple legal, constitutional, political, security and personal privacy issues, many of which have yet to be resolved.

NON-CERTIFIED IT SKILLS ANALYSIS – Pandemic Winners, cont'd.

6. TIBCO Spotfire

Average Pay Premium: 17 percent of base salary equivalent

Market Value Increase: 21.4 percent (in the six months through April 1, 2021)

TIBCO's **Spotfire** is a data visualization tool that allows users to access and combine data in a single analysis, enabling business users to visualize and analyze their data with little to no IT support. It allows users to define KPIs and send alerts to iPhone or Android phones, enabling teams to collaborate on mobile devices while management can simultaneously get timely information and manage by exception. Spotfire is open source and can perform Big Data, Content and Predictive Analytics.

Spotfire can be deployed either in cloud or on-premise and supports a broad range of use cases, from building dashboards and data analytics to sophisticated predictive and real-time analytics and continually helping user discover insights that they can act on. It complements existing business intelligence and reporting tools. Spotfire provides connectivity to databases including big-data tools and applications such as CRM, ERP, Excel and MS Access. It also provides native connectivity to R Project for advanced statistical analytics, automation services to automate sending PDF/MS PowerPoint reports and an API and software development kit. Among all the above features driving growth in Spotfire pay premiums is that it keeps the total cost of ownership low by allowing users to build once and publish to thousands of users over internet or intranet, as a PDF or as MS PowerPoint reports.

7. Apache Pig

Average Pay Premium: 17 percent of base salary equivalent

Market Value Increase: 13.3 percent (in the six months through April 1, 2021)

Apache Pig is a high-level platform for analyzing large data sets that consists of a high-level language for expressing data analysis programs, coupled with infrastructure for evaluating these programs. The salient property of Pig programs is that their structure is amenable to substantial parallelization, which in turns enables them to handle very large data sets. Right now, Pig's infrastructure layer consists of a compiler that produces sequences of Map-Reduce programs, for which large-scale parallel implementations already exist (e.g., the Hadoop subproject). Pig can execute its Hadoop jobs in MapReduce, Apache Tez, or Apache Spark. Pig's language layer currently consists of a textual language called Pig Latin which abstracts the programming from the Java MapReduce idiom into a notation which makes MapReduce programming high level, similar to that of SQL for relational database management systems. Pig Latin can be extended using user-defined functions (UDFs) which the user can write in Java, Python, JavaScript, Ruby or Groovy and then call directly from the language.

Pig's language layer has the following key properties:

- **Ease of programming.** It is trivial to achieve parallel execution of simple, "embarrassingly parallel" data analysis tasks. Complex tasks comprised of multiple interrelated data transformations are explicitly encoded as data flow sequences, making them easy to write, understand, and maintain.
- **Optimization opportunities.** The way in which tasks are encoded permits the system to optimize their execution automatically, allowing the user to focus on semantics rather than efficiency.
- **Extensibility.** Users can create their own functions to do special-purpose processing

NON-CERTIFIED IT SKILLS ANALYSIS – Pandemic Winners, cont'd.

8. [Tie] Cryptography (encryption, VPN, SSL/TLS, Hybrids)

Data Architecture

Ethereum

Identity and access management

PyTorch

Average Pay Premium: 17 percent of base salary equivalent

Market Value Increase: 6.3 percent (in the six months through April 1, 2021)

Cryptography (or cryptology) is the practice and study of techniques for secure communication in the presence of third parties called adversaries. More generally, cryptography is about constructing and analyzing protocols that prevent third parties or the public from reading private messages. Modern cryptography exists at the intersection of the disciplines of mathematics, computer science, electrical engineering, communication science, and physics and includes various aspects of information security such as data confidentiality, data integrity, authentication, and non-repudiation. Applications of cryptography include electronic commerce, chip-based payment cards, digital currencies, computer passwords, and military communications.

Data architecture is the process of standardizing how organizations collect, store, transform, distribute, and use data. The goal is to deliver relevant data to people who need it, when they need it, and help them make sense of it. And it's the skyrocketing growth and availability of real-time data from internal and external sources that is driving skills demand as business strategists demanding more and faster insights from data. The promise of modern data architecture design is that a well-designed process puts business strategists and technical expertise at the same table. Together, they can determine what data is needed to propel the business forward, how that data can be sourced, and how it can be distributed to provide actionable information for decision makers.

What's also pushed big data into the real world is the growing influence of the cloud, which provides the kind of fast, easy, and low-cost scalability that modern data architecture requires. The cloud also allows organizations to pool much or all of their data in one place, where ideally, one master version of the data is available to all who need it.

Data architecture in its current phase has to be built around certain characteristics which are also prerequisites to earning cash pay premiums:

- *User-driven:* In the past, data was static and access was limited. In modern data architecture, business users can confidently define the requirements, because data architects can pool data and create solutions to access it in ways that meet business objectives.
- *Built on shared data:* Effective data architecture is built on data structures that encourage collaboration. Good data architecture eliminates silos by combining data from all parts of the organization, along with external sources as needed, into one place to eliminate competing versions of the same data. In this environment, data is not bartered among business units or hoarded, but is seen as a shared, companywide asset.
- *Automated:* Automation removes the friction that made legacy data systems tedious to configure. Processes that took months to build can now be completed in hours or days using cloud-based tools. If a user wants access to different data, automation enables the architect to quickly design a pipeline to deliver it. As new data is sourced, data architects can quickly integrate it into the architecture.
- *Driven by AI:* Smart data architecture takes automation to a new level, using machine learning (ML) and artificial intelligence (AI) to adjust, alert, and recommend solutions to new conditions. ML and AI can identify data types, identify and fix data quality errors, create structures for incoming data, identify relationships for fresh insights, and recommend related data sets and analytics.
- *Elastic:* Elasticity allows companies to scale up or down as needed. Here, the cloud is your best friend, as it allows on-demand scalability quickly and affordably. Elasticity allows administrators to focus on troubleshooting and problem solving rather than on exacting capacity calibration or overbuying hardware to keep up with demand.

NON-CERTIFIED IT SKILLS ANALYSIS – Pandemic Winners, cont'd.

- **Simple:** Simplicity trumps complexity in efficient data architecture. Do you need a show dog or a workhorse? Strive for simplicity in data movement, data platforms, data assembly frameworks, and analytic platforms.
- **Secure:** Security is built into modern data architecture, ensuring that data is available on a need-to-know basis as defined by the business. Good data architecture also recognizes existing and emerging threats to data security, and ensures regulatory compliance with legislation like HIPAA and GDPR.

Ethereum is one of the most popular decentralized open source, public blockchain-based distributed computing platform and OS for smart contract functionality. If you want to become a blockchain expert, learning how to build apps on Ethereum is a great place to start. It is the second-largest cryptocurrency platform by market capitalization, behind Bitcoin, serving as the platform for over 1,900 different cryptocurrencies and tokens, including 47 of the top 100 cryptocurrencies.

Identity and access management (IAM) in enterprise IT is about defining and managing the roles and access privileges of individual network entities (users and devices) to a variety of cloud and on-premises applications. Users include customers, partners and employees; devices include computers, smartphones, routers, servers, controllers and sensors. The core objective of IAM systems is one digital identity per individual or item. Once that digital identity has been established, it must be maintained, modified and monitored throughout each user's or device's access lifecycle.

Identity has become more important since the COVID pandemic has made physical boundaries irrelevant, with the aggressive move to remote users and giving more users outside the organization greater access to their internal systems. With digital transformation accelerating, identity has become the cornerstone of customer acquisition, management, and retention, and COVID-caused disruption has surfaced weaknesses in many organizations' IAM architecture and greatly accelerated IAM evolution.

PyTorch is an open source machine learning framework based on the Torch library that accelerates the path from research prototyping to production deployments. It is used for applications such as computer vision and natural language processing, primarily developed by Facebook's AI Research lab (FAIR). Although the Python interface is more polished and the primary focus of development, PyTorch also has a C++ interface. A number of pieces of Deep Learning software are built on top of PyTorch, including Tesla Autopilot, Uber's Pyro, PyTorch Lightning, and Catalyst.

PyTorch provides two high-level features:

- Tensor computing (like NumPy) with strong acceleration via graphics processing units (GPU)
- Deep neural networks built on a tape-based automatic differentiation system

Key features and capabilities of PyTorch include:

- *Production Ready, Transition seamlessly between eager and graph modes with TorchScript, and accelerate the path to production with TorchServe*
- *Distributed Training. Scalable distributed training and performance optimization in research and production is enabled by the torch.distributed backend.*
- *Robust Ecosystem. A rich ecosystem of tools and libraries extends PyTorch and supports development in computer vision, NLP and more.*
- *Cloud Support. PyTorch is well supported on major cloud platforms, providing frictionless development and easy scaling.*

NON-CERTIFIED IT SKILLS ANALYSIS – Pandemic Winners, cont'd.

13. [Tie] IT Governance

Average Pay Premium: 16 percent of base salary equivalent

Market Value Increase: 14.3 percent (in the six months through April 1, 2021)

At its essence *IT governance* provides a structure for aligning IT strategy with business strategy. By following a formal framework, organizations can produce measurable results toward achieving their strategies and goals. A formal program also takes stakeholders' interests into account, as well as the needs of staff and the processes they follow. In the big picture, IT governance is an integral part of overall enterprise governance.

But what is driving popularity in IT governance right now that has resulted in higher pay premiums than before? We believe it's because organizations are being subjected to more and more regulations governing the protection of confidential information, financial accountability, data retention and disaster recovery, among other things. They're also under more pressure from shareholders, stakeholders and customers. To ensure they meet internal and external requirements, more organizations are implementing formal IT governance programs that provide a framework of best practices and controls. This applies to both public- and private-sector organizations; a formal IT governance program should be on the radar of any organization in any industry that needs to comply with regulations related to financial and technological accountability. Implementing a comprehensive IT governance program requires a lot of time, effort and especially expertise that should be rewarded with pay premiums.

There's also GRC (governance, risk and compliance) which is practically the same thing as IT governance but necessarily incorporates security domains. While GRC is the parent program, what determines which framework is used is often the placement of the CISO and the scope of the security program. For example, when a CISO reports to the CIO, the scope of GRC is often IT focused. When security reports outside of IT, GRC can cover more business risks beyond IT.

14. [Tie] Clojure

Prescriptive Analytics

Risk management

Teradata

Average Pay Premium: 16 percent of base salary equivalent

Market Value Increase: 6.7 percent (in the six months through April 1, 2021)

Clojure is a general-purpose, dynamic, compiled, and predominantly functional programming language from the Lisp family tree. Amazon, Staples, and Walmart are just some examples of major companies that use it in their technology stacks. Clojure embraces **Functional Programming (FP)**. Functions are treated as first-class citizens, and data is immutable by default. When you create lists, maps, vectors, etc., they are immutable by definition.

Functional features of Clojure include:

- *Declarative programming model.* You express the logic of a program's structure and elements (what you want data to do) without having to describe its control flow (how it's done).
- *Support for higher order functions.* These are functions that can take in functions as arguments and/or return functions as results.
- *Immutable persistent data structures.* When a change occurs, the old data structure is preserved, and a new structure is returned expressing the relevant parts of the old structure with the newly created data. Because they are immutable, they eliminate many typical errors found in most concurrent programming.
- *Absence of side effects.* While complete absence of side effects is impossible for real-world applications, Clojure's immutable information model does a good job of isolating them. Clojure uses side effects explicitly via its language syntax.

NON-CERTIFIED IT SKILLS ANALYSIS – Pandemic Winners, cont'd.

Clojure is unique in several ways, which may be why employers are willing to pay higher cash pay premiums for it. One is that it was designed to be a hosted language: Instead of defining its own platform (as Python, Ruby, Java, etc.) have done, Clojure was meant to take advantage of existing platforms and to build on top of them. Clojure currently is developed on two platforms, the Java Virtual Machine and JavaScript. Clojure has incredible reach, running wherever Java does, any web browser, or any mobile device. While most functional languages, such as Scala and Haskell, tend toward static types, Clojure is dynamic. The tool's REPL (Read-Eval-Print Loop) makes it easier to catch errors as you code, and dynamism makes code more flexible and extensible.

Clojure is particularly good at data processing and concurrent programming, two applications that have become increasingly relevant in computing. Clojure is used for everything from simple web sites to desktop applications to music synthesis systems to cloud-based Twitter analysis engines to high-frequency trading. It's a powerful tool for building high-leverage abstractions. And its simplicity makes it great for managing the complexity of the real-world.

Prescriptive analytics, an area of business analytics dedicated to finding the best course of action for a given situation, is related to both descriptive and predictive analytics. While descriptive analytics aims to provide insight into what has happened and predictive analytics helps model and forecast what might happen, prescriptive analytics seeks to determine the best solution or outcome among various choices given the known parameters. It can also suggest decision options for how to take advantage of a future opportunity or mitigate a future risk, and illustrate the implications of each decision option. In practice, prescriptive analytics can continually and automatically process new data to improve the accuracy of predictions and provide better decision options.

Specific techniques used in prescriptive analytics include optimization, simulation, game theory and decision-analysis methods. Advancements in the speed of computing and the development of complex mathematical algorithms applied to the data sets have boosted demand for prescriptive analysis skills.

Prescriptive analytics can be used in two ways:

- **Inform decision logic with analytics.** Decision logic needs data as an input to make the decision. The veracity and timeliness of data will ensure that the decision logic will operate as expected. It doesn't matter if the decision logic is that of a person or embedded in an application — in both cases, prescriptive analytics provides the input to the process. Prescriptive analytics can be as simple as aggregate analytics about how much a customer spent on products last month or as sophisticated as a predictive model that predicts the next best offer to a customer. The decision logic may even include an optimization model to determine how much, if any, discount to offer to the customer.
- **Evolve decision logic.** Decision logic must evolve to improve or maintain its effectiveness. In some cases, decision logic itself may be flawed or degrade over time. Measuring and analyzing the effectiveness or ineffectiveness of enterprises decisions allows developers to refine or redo decision logic to make it even better. It can be as simple as marketing managers reviewing email conversion rates and adjusting the decision logic to target an additional audience. Alternatively, it can be as sophisticated as embedding a machine learning model in the decision logic for an email marketing campaign to automatically adjust what content is sent to target audiences.

Every businesses and organizations face the risk of unexpected, harmful events that can cost the company money or cause it to permanently close. Evaluating and managing risk is an obsession for most businesses; for others it is something to ignore at great peril to their future success. **Risk management** allows organizations to attempt to prepare for the unexpected by minimizing risks and extra costs before they happen.

It is the process of identifying, assessing and controlling threats to an organization's capital and earnings. These threats, or risks, could stem from a wide variety of sources, including financial uncertainty, legal liabilities, strategic management errors, accidents and natural disasters. IT security threats and data-related risks, and the risk management strategies to alleviate them, have become a top priority for digitized companies. As a result, a risk management plan increasingly includes companies' processes for identifying and controlling threats to its digital assets, including proprietary corporate data, a customer's personally identifiable information (PII) and intellectual property.

NON-CERTIFIED IT SKILLS ANALYSIS – Pandemic Winners, cont'd.

By implementing a risk management plan and considering the various potential risks or events before they occur, an organization can save money and protect their future. This is because a robust risk management plan will help a company establish procedures to avoid potential threats, minimize their impact should they occur and cope with the results. This ability to understand and control risk enables organizations to be more confident in their business decisions. Furthermore, strong corporate governance principles that focus specifically on risk management can help a company reach their goals.

Teradata Corporation provides database and hybrid enterprise cloud analytics-related software, product, and services for various industries comprising communications, financial services, government, healthcare, insurance, manufacturing, media and entertainment, oil and gas, retail, travel and transportation, and utilities. Teradata's cloud and hardware-based data warehousing, business analytics, and consulting services have been around for many years, including its Vantage platform introduced in 2018. What's giving it a boost lately has been the boom in big data and advanced data analytics solutions which we have discuss in detail in this MI reports and in past issues.

IT Certifications Data Trend Charts & Analysis

(Data collected through April 1, 2021)

Avaya Certified Design Specialist
Avaya Certified Implementation Specialist
Avaya Certified Integration Specialist
Avaya Certified Solution Specialist
Avaya Professional Design Specialist
AWS Certified Advanced Network - Specialty
AWS Certified Developer - Associate
AWS Certified DevOps Engineer - Professional
AWS Certified Security - Specialty
AWS Certified Solutions Architect - Associate (Cloud)
AWS Certified Solutions Architect - Professional (Cloud)
AWS Certified SysOps Administrator- Associate (Cloud)
BICSI ITS Technician
BICSI Technician and Registered Communications Distribution Designer
Brocade Certified Network Engineer
Brocade Certified Network Professional
Brocade Certified Fabric Designer
Brocade Certified Fabric Professional
Certificate of Cloud Security Knowledge
Certification Authorization Professional
Certification of Capability in Business Analysis
Certified Analytics Professional
Certified Business Analysis Professional
Certified Business Continuity Professional
Certified Cloud Architect
Certified Cloud Security Professional (CCSP)
Certified Cloud Technology Professional
Certified Computer Examiner
Certified Computing Professional
Certified Cyber Forensics Professional
Certified Data Centre Management Professional
Certified Data Management Professional
Certified Data Professional
Certified Disaster Recovery Engineer
Certified Forensic Computer Examiner
Certified Fraud Examiner
Certified Healthcare Information Security and Privacy Practitioner
Certified in Convergent Network Technologies
Certified in Governance, Risk and Compliance
Certified in Risk and Information Systems Control
Certified in the Governance of Enterprise IT
Certified Information Privacy Manager- all countries
Certified Information Privacy Professional - all countries
Certified Information Privacy Technologist- all countries
Certified Information Security Manager (CISM)
Certified Information Systems Auditor (CISA)
Certified Information Systems Security Professional (CISSP)
Certified IP Telecom Network Specialist
Certified IT Architect (IASA CITA)
Certified IT Compliance Professional
Certified Manager of Software Quality
Certified Penetration Testing Engineer
Certified Project Management Practitioner
Certified Protection Professional
Certified ScrumMaster
Certified Scrum Coach
Certified Scrum Developer
Certified Scrum Product Owner
Certified Scrum Professional
Certified Scrum Trainer
Certified Secure Software Lifecycle Professional (CSSLP)
Certified Software Quality Analyst
Certified Telecommunications Network Specialist
Check Point Certified Security Administrator (CCSA)
Check Point Certified Security Expert
Check Point Certified Security Master
Cisco Certified Architect
Cisco Certified CyberOps Associate
Cisco Certified Design Expert
Cisco Certified DevNet Associate
Cisco Certified DevNet Professional
Cisco Certified Entry Network Technician
Cisco Certified Internetwork Expert (CCIE, all variations)
Cisco Certified Network Associate - Data Center
Cisco Certified Network Associate (CCNA Routing and Switching)
Cisco Certified Network Associate (Network Security)
Cisco Certified Network Associate (Networking automation and programmability)
Cisco Certified Network Associate (was CCNA Cloud)
Cisco Certified Network Associate (was CCNA Collaboration)
Cisco Certified Network Associate (was CCNA Wireless)
Cisco Certified Network Associate (was Design Associate)
Cisco Certified Network Professional - Collaboration
Cisco Certified Network Professional - Data Center
Cisco Certified Network Professional - Data Center (CCNP Cloud)
Cisco Certified Network Professional - Enterprise (was CCNP Routing and Switching)
Cisco Certified Network Professional - Enterprise (was CCNP Wireless)
Cisco Certified Network Professional - Security
Cisco Certified Network Professional
Cisco Certified Network Professional (was CC Design Professional)
Cisco Certified Systems Instructor
Cisco Data Center Unified Computing Design Specialist
Cisco Data Center Unified Fabric Support Specialist
Citrix Certified Associate - Networking
Citrix Certified Associate - Virtualization
Citrix Certified Expert – Networking
Citrix Certified Expert - Virtualization
Citrix Certified Instructor (CCI - Virtualization, Networking, or Mobility)
Citrix Certified Professional - Networking
Citrix Certified Professional I- Virtualization
Citrix XenServer Certified (CC-XenServer)
CIW Certified Database Design Specialist
CIW Web Design Professional
CIW Web Development Professional
CIW Web Foundations Associate
CIW Web Security Professional
Cloud U (Rackspace)
Cloudera Certified Associate Administrator
Cloudera Certified Associate Data Analyst
Cloudera Certified Associate Spark and Hadoop Developer
Cloudera Certified Professional: Data Engineer
CompTIA A+
CompTIA Advanced Security Practitioner
CompTIA Certified Technical Trainer
CompTIA Cloud Essentials
CompTIA Cloud+
CompTIA Cybersecurity Analyst+
CompTIA Linux+
CompTIA Mobile App Security+
CompTIA Mobility+
CompTIA Network (Network+)
CompTIA Penetration Tester
CompTIA Project+
CompTIA Security+
CompTIA Server+
CompTIA Storage+
Convergence Technologies Professional
CSX CyberSecurity Practitioner
CWNP Certified Wireless Security Professional
CWNP/Certified Wireless Analysis Professional
CWNP/Certified Wireless Design Professional
CWNP/Certified Wireless Network Administrator
CWNP/Certified Wireless Network Trainer
CWNP/Certified Wireless Network Expert
CWNP/Certified Wireless Technology Specialist
Cyber Security Forensic Analyst
EC-Council Certified Application Security Engineer
EC-Council Certified Encryption Specialist
EC-Council Certified Ethical Hacker
EC-Council Certified Incident Handler V2
EC-Council Certified Network Defender
EC-Council Certified Network Defense Architect
EC-Council Certified Security Analyst
EC-Council Computer Hacking Forensic Investigator
EC-Council Disaster Recovery Professional
EC-Council Licensed Penetration Tester
EMC Cloud Architect Expert
EMC Cloud Architect Specialist
EMC Cloud Engineer

540 Tech Certifications Reported

Foote Partners News Release – May 17, 2021

EMC Data Center Architect (EMCDCA - all versions)
EMC Data Science Associate
EMC Data Science Specialist, Advanced Analytics
EMC Implementation Engineer - Expert
EMC Implementation Engineer - Specialist
EMC Information Storage Associate
EMC Platform Engineer - Specialist
EMC Storage Administrator - Associate
EMC Storage Administrator - Expert
EMC Storage Administrator - Specialist
EMC System Administrator – Documentum Specialist
EMC Technology Architect - Expert
EMC Technology Architect - Specialist
GIAC Assessing Wireless Networks
GIAC Certified Defending Advanced Threats
GIAC Certified Detection Analyst
GIAC Certified Enterprise Defender
GIAC Certified Forensics Analyst
GIAC Certified Forensics Examiner
GIAC Certified Incident Handler
GIAC Certified Intrusion Analyst
GIAC Certified Penetration Tester
GIAC Certified Perimeter Protection Analyst
GIAC Certified Project Manager
GIAC Certified Unix Security Administrator
GIAC Certified Web Application Defender
GIAC Certified Windows Security Administrator
GIAC Critical Controls Certifications
GIAC Cyber Threat Intelligence
GIAC Exploit Researcher and Advanced Penetration Tester
GIAC Information Security Fundamentals
GIAC Information Security Professional
GIAC Mobile Device Security Analyst
GIAC Network Forensic Analyst
GIAC Python Coder
GIAC Reverse Engineering Malware
GIAC Secure Software Programmer--Java
GIAC Secure Software Programmer--.NET
GIAC Security Essentials
GIAC Security Expert
GIAC Security Leadership
GIAC Systems and Network Auditor

GIAC Web Application Penetration Tester
Google Associate Cloud Engineer
Google Certified Professional Cloud Architect
Google Cloud Certified - Professional Data Engineer
Google Professional Cloud Developer
Google Professional Cloud Network Engineer
Google Professional Cloud Security Engineer
HDI Customer Service Representative
HDI Desktop Support Manager
HDI Desktop Support Technician
HDI Support Center Analyst
HDI Support Center Director
HDI Support Center Manager
HDI Support Center Team Lead
HDI Technical Support Professional
Help Desk Analyst: Tier 1 Support Specialist/Ed2Go
Help Desk Team Lead/RCCSP
Hitachi Qualified Professional - Storage Administration
HP Accredited Integration Specialist (AIS)
HP Accredited Solutions Expert (ASE - all)
HP Accredited Technical Professional (ATP - all)
HP ASE – Cloud Integrator V2
HP ASE - Storage Solutions Architect V1 /V2
HP ASE Cloud Architect V2
HP ASE Vertica Big Data Solutions Administrator V1
HP ATP - Cloud Administrator V1
HP ATP - Storage Solutions V1 /V2
HP ATP Big Data Vertica Solutions V1
HP Master Accredited Solutions Expert (MASE - all)
Huawei Certified Network Associate (all)
Huawei Certified Network Professional (all)
Huawei Certified Network Expert (all)
IBM Advanced Systems Administrator (all)
IBM Certified Administrator - Cognos Analytics
IBM Certified Application Developer - Cloud Solutions v3
IBM Certified Application Developer - DB2 9.7 for Linux, Unix and Windows
IBM Certified Application Developer (all)
IBM Certified Data Engineer - Big Data
IBM Certified Database Administrator - DB2 11.1 for Linux, UNIX and Windows

IBM Certified Developer - Cognos Analytics
IBM Certified Professional Developer - Cloud v4
IBM Certified Professional SRE - Cloud v1
IBM Certified Solution Advisor - Blockchain Platform V2
IBM Certified Solution Advisor - DevOps V2
IBM Certified Solution Architect – Cloud v4
IBM Certified Solution Architect - Data Warehouse V1
IBM Certified Solution Designer (all)
IBM Certified Specialist - AI Enterprise Workflow V1
IBM Certified Systems Administrator: WebSphere Application Server Network Deployment
IBM Certified Systems Administrator (all)
InfoSys Security Architecture Professional (ISSAP/CISSP)
InfoSys Security Engineering Professional (ISSEP/CISSP)
InfoSys Security Management Professional (ISSMP/CISSP)
ITIL Expert Certification
ITIL Foundation Certification
ITIL Intermediate Certification
ITIL Master Certification
JBoss Certified Developer (Seam, Persistence, ESB)
Juniper Networks Certified Internet Associate
Juniper Networks Certified Internet Expert
Juniper Networks Certified Internet Professional
Juniper Networks Certified Internet Specialist
Linux Foundation Certified Engineer
Linux Foundation Certified System Administrator
Linux Professional Institute certification (LPIC- 2)
Linux Professional Institute certification (LPIC- 3)
Magento 2 Certified Professional Developer
MCSE: Core Infrastructure
Microsoft Certified Azure Administrator
Microsoft Certified Azure Administrator Associate
Microsoft Certified Azure AI Engineer Associate
Microsoft Certified Azure Data Engineer Associate
Microsoft Certified Azure Data Scientist Associate
Microsoft Certified Azure Security Engineer Associate
Microsoft Certified Azure Solutions Architect
Microsoft Certified Azure Solutions Architect

Microsoft Certified Azure Solutions Architect Expert
Microsoft Certified Professional
Microsoft Certified Solutions Associate(all)
Microsoft Certified Solutions Associate: BI Reporting
Microsoft Certified Solutions Associate: Cloud Platform
Microsoft Certified Solutions Associate: Microsoft Dynamics 365
Microsoft Certified Solutions Associate: SQL 2016 DBA
Microsoft Certified Solutions Associate: SQL Server 2012/2014/2016
Microsoft Certified Solutions Associate: Web Applications
Microsoft Certified Solutions Associate: Windows Server 2012/2016
Microsoft Certified Solutions Developer (MCSD)
Microsoft Certified Solutions Developer: Applications Builder
Microsoft Certified Solutions Expert : Server Infrastructure
Microsoft Certified Solutions Expert: Business Applications
Microsoft Certified Solutions Expert: Business Intelligence
Microsoft Certified Solutions Expert: Cloud Platform and Infrastructure
Microsoft Certified Solutions Expert: Data Management and Analytics
Microsoft Certified Solutions Expert: Data Platform
Microsoft Certified Solutions Expert: Desktop Infrastructure
Microsoft Certified Trainer (MCT)
Microsoft MTA: Windows OS
Microsoft Office Specialist
Mongo DB Certified DBA
Mongo DB Certified Developer
MongoDB Certified Developer Associate
NetApp Certified Data Administrator, ONTAP
NetApp Certified Implementation Engineer
NetApp Certified Storage Associates – Hybrid Cloud

540 Tech Certifications Reported

Foote Partners News Release – May 17, 2021

NetScout/nGenius Certified Analyst (nCA)	Oracle Certified Professional - Java EE Web Services Developer	Red Hat Certified Architect	Six Sigma Black Belt
NetScout/nGenius Certified Expert (nCE)	Oracle Certified Professional - Java SE	Red Hat Certified Architect: Application Development	Six Sigma Green Belt
NetScout/nGenius Certified Master (nCM)	Oracle Certified Professional - Java SE Programmer	Red Hat Certified Architect: Application Platform	Six Sigma Master Black Belt
NetScout/nGenius Certified Professional	Oracle Certified Professional - MySQL 5 Database Administrator	Red Hat Certified Architect: Cloud	Six Sigma Yellow Belt
Novell/Certified Administrator	Oracle Certified Professional - MySQL 5 Developer	Red Hat Certified Architect: DevOps	SNIA Certified Storage Architect
Novell/Certified Novell Engineer	Oracle Certified Professional - PL/SQL Developer	Red Hat Certified Datacenter Specialist	SNIA Certified Storage Networking Expert
Novell Certified Instructor	Oracle Certified Professional - Solaris 10 Systems Administrator	Red Hat Certified Engineer in Red Hat OpenStack	SNIA Certified Storage Professional
Novell Certified Linux Engineer	Oracle Certified Professional, Java EE Web Component Developer	Red Hat Certified Engineer	SNIA Certified Systems Engineer Sniffer Certified Expert
Novell Certified Linux Professional	Oracle Certified WebLogic Server System Administrator Certified Expert	Red Hat Certified System Administrator in Red Hat OpenStack	SolarWinds Certified Professional
Novell Identity Manager Administrator	Oracle Exadata 11g Certified Implementation Specialist	Red Hat Certified Systems Administrator	SUSE Certified Administrator
Okta Certified Administrator	Oracle Linux Certified Administrator	Red Hat Certified Specialist in Virtualization	SUSE Enterprise Engineer
Okta Certified Developer	Oracle SOA 12c Infrastructure Implementation Certified Expert	RSA Certified Administrator	SUSE Enterprise Architect
Okta Certified Professional	Oracle VM 3.0 for x86 Certified Implementation Specialist	RSA Certified Instructor	Systems Security Certified Practitioner
Open Group Certified Architect (Open CA)	Pegasystems Certified Data Scientist	Salesforce B2C Commerce Developer	Tableau Desktop Certified Professional
Open Group Certified IT Specialist (Open CITS)	Pegasystems Certified Lead System Architect	Salesforce Certified Application Architect	Tableau Server Certified Professional
Oracle Business Intelligence Foundation Suite 11G Certified Implementation Specialist	Pegasystems Certified Senior Systems Architect	Salesforce Certified Data Architecture and Management Designer	Teradata 14 Certified Associate
Oracle Certified Associate - DBA	Pegasystems Certified System Architect	Salesforce Certified Integration Architecture Designer	Teradata 14 Certified Database Administrator
Oracle Certified Associate - Java SE Programmer	Pegasystems Certified Pega Business Architect	Salesforce Certified Platform Developer	Teradata 14 Certified Enterprise Architect
Oracle Certified Associate - MySQL 5	Pegasystems Certified Robotics System Architect	Salesforce Certified Systems Architect	Teradata 14 Certified Master
Oracle Certified Associate - WebLogic Server Administrator	PHP Certification	Salesforce Certified Technical Architect	Teradata 14 Certified Professional
Oracle Certified Expert - Java Platform EE Developer (all)	Pivotal Application Architect	Salesforce Certified Lifecycle and Deployment Designer	Teradata 14 Certified Solutions Developer
Oracle Certified Expert - MySQL 5.1 Cluster Database Administrator	Pivotal Cloud Foundry Operator certification	Salesforce Identity and Access Management Designer	Teradata 14 Certified Technical Specialist
Oracle Certified Expert - Siebel CRM Business Analyst	Pivotal Developer	Salesforce Platform App Builder	TIBCO Certified Professional
Oracle Certified Expert - Solaris 10 Network Administrator for Solaris	PMI Agile Certified Practitioner	Salesforce.com Certified Administrator	TIBCO Certified SOA Architect
Oracle Certified Master - DBA	PMI Certified Associate in Project Management	Salesforce.com Certified Advanced Administrator	TOGAF 9 Certified
Oracle Certified Master - Java EE Enterprise Architect	PMI Portfolio Management Professional	SAS Certified Advanced Programmer for SAS 9	VMware Certified Advanced Professional
Oracle Certified Master - Java SE Developer	PMI Professional in Business Analysis	SAS Certified Base Programmer for SAS 9	VMware Certified Advanced Professional 6.5 - Data Center Virtualization Design
Oracle Certified Professional - Advanced PL/SQL Developer	PMI Program Management Professional	SAS Certified Big Data Professional Using SAS 9	VMware Certified Advanced Professional – Network Virtualization
Oracle Certified Professional - Application Server Administrator	PMI Project Management Professional	SAS Certified Data Integration Developer for SAS 9	VMware Certified Advanced Professional (all)
Oracle Certified Professional - Database Cloud Administrator	PMI Risk Management Professional	SAS Certified Data Scientist Using SAS 9	VMware Certified Advanced Professional 6 - Data Center Virtualization Deployment
Oracle Certified Professional - DBA	Prince2 Foundation	SAS Certified Predictive Modeler - SAS Enterprise Miner 14	VMware Certified Advanced Professional 6/7 - Cloud Mgt and Automation Deployment
Oracle Certified Professional - E-Business Suite 12	Prince2 Practitioner	SAS Certified Statistical Business Analyst - SAS 9	VMware Certified Advanced Professional 6/7 - Cloud Mgt and Automation Design
Oracle Certified Professional - Fusion Middleware 11g Forms Developer	Professional Certified Investigator	SAS® Certified Advanced Analytics Professional Using SAS®9	VMware Certified Associate - Cloud
	Professional in Project Management	SAS® Certified BI Content Developer for SAS®9	VMware Certified Associate - Data Center Virtualization
	QlikView Business Analyst	SAS® Certified Data Quality Steward for SAS®	VMware Certified Design Expert – Network Virtualization
	QlikView Data Architect	Siebel 8 Consultant Certified Expert	VMware Certified Design Expert - Cloud Mgt and Automation
	Qualified Information Security Professional Q/ISP		
	Rackspace Certified Technician		

540 Tech Certifications Reported

Foote Partners News Release – May 17, 2021

VMware Certified Design Expert (all)
VMware Certified Design Expert – Network
Virtualization
VMware Certified Design Expert - Cloud Mgt
and Automation
VMware Certified Design Expert (all)
VMware Certified Design Expert 6 - Data
Center Virtualization
VMware Certified Professional - Digital
Workspace
VMware Certified Professional – Desktop and
Mobility 2019
VMware Certified Professional - Network
Virtualization
VMware Certified Professional 6 - Data Center
Virtualization (VCP6-DCV)
VMware Certified Professional 6.5 - Data
Center Virtualization (VCP6.5-DCV)
VMware Certified Professional 6/6.5
VMware Certified Professional 6/7 - Cloud Mgt
and Automation

IT CERTIFICATIONS PAY SUMMARY - Through April 1, 2021

B. IT CERTIFICATIONS PAY PERFORMANCE: By Category

TECH CERTIFICATIONS. Cash pay for tech certifications is currently at a seven-year low. 540 tech certifications lost even more value overall in the first three months of 2021, down an average of 0.4% as 84 changed in value, up from 75 the prior quarter. Pay performance from January to March was lower or unchanged for five of eight certification segments.

IT Certifications - % Growth/Decline
 3 months & 12 months

(540 certifications, data through 4/1/2021)

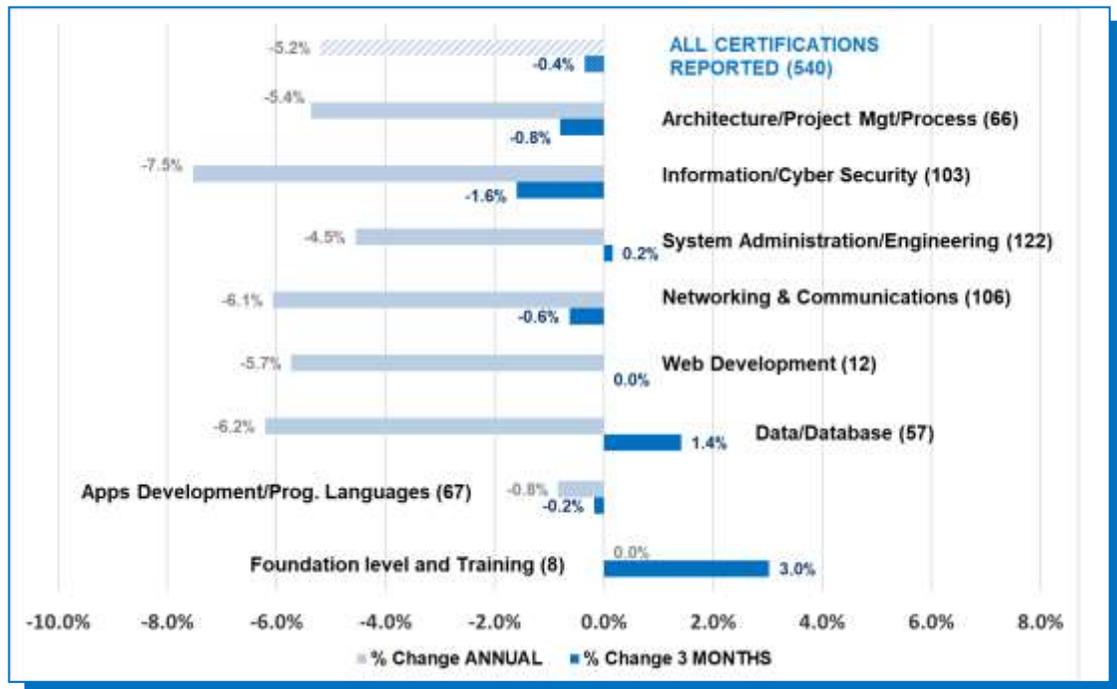
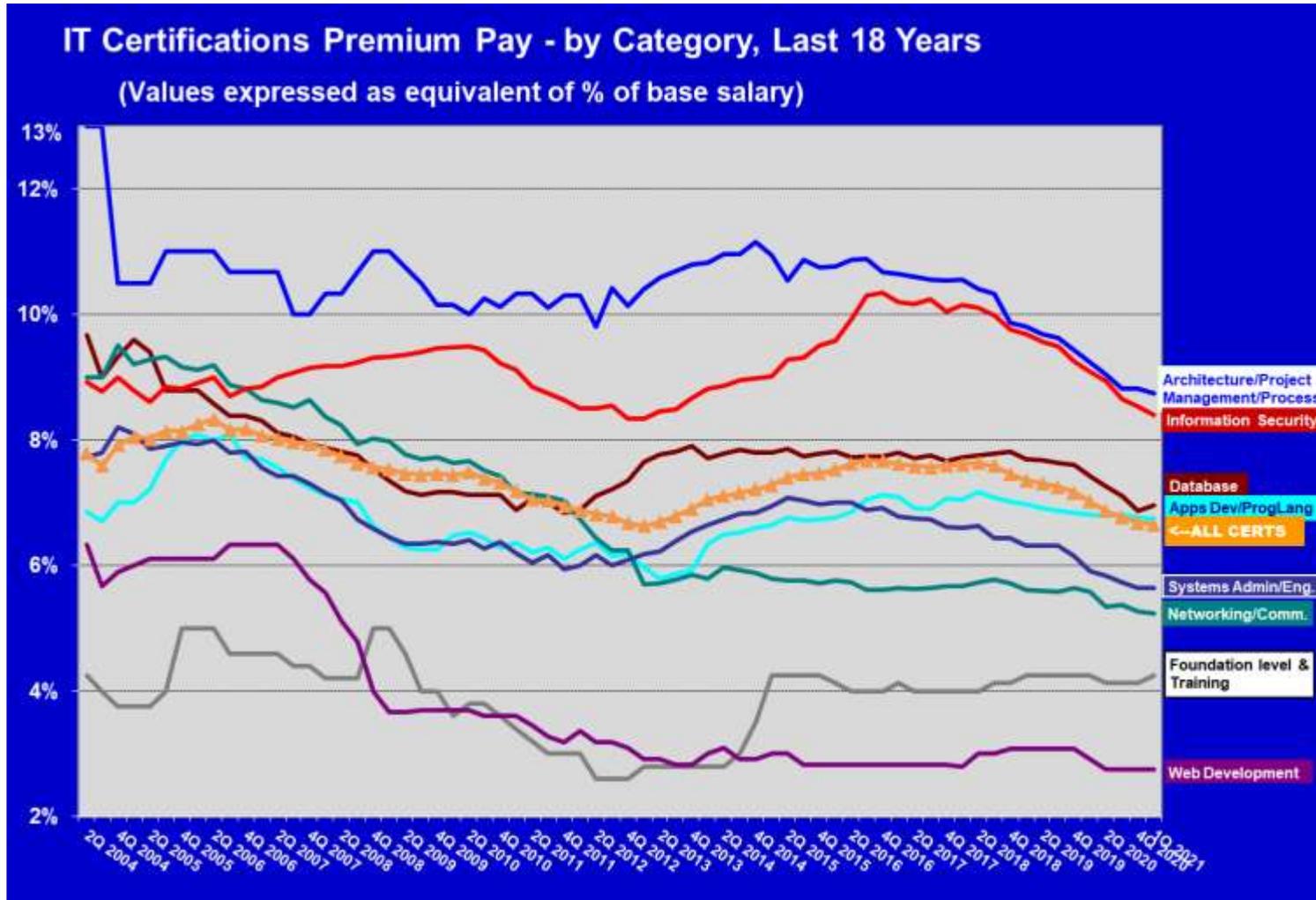


Figure 3

Source: Foote Partners [IT Skills & Certifications Pay Index™](#), 1st Quarter 2021 data

18-YEAR IT CERTIFICATIONS PAY TRENDS BY CATEGORY

Average median cash pay premium for a single IT certification. Data through April 1, 2021 – 83,274 IT Professionals



Pay data supporting these charts available in the [IT Skills and Certifications Pay Index™](#) - 1Q 2021 data edition

IT CERTIFICATIONS PAY TREND HIGHLIGHTS: Market Value Gainers & Highest Paying – 1st Quarter 2021 data

These tech certifications *gained 10% or more in market value in the three months ending April 1, 2021* (seen below grouped by segment). *Listed in descending order of amount of % gain in cash pay premium* (including ties). Highest paying skills listed on right *in alphabetical order*.

TECH CERTIFICATION Gainers	Highest Paying – Cash Premiums (A – Z)
<p><u>Info/Cyber Security certifications</u> GIAC Web Application Penetration Tester InfoSys Security Engineering Professional (ISSEP/CISSP) InfoSys Security Management Professional (ISSMP/CISSP)</p> <p><u>Networking and Communications certifications</u> CWNP/Certified Wireless Network Administrator Juniper Networks Certified Professional (JNCIP - all specializations) AWS Certified Solutions Architect - Associate (Cloud) Juniper Networks Certified Expert (JNCIE - all specializations) AWS Certified Solutions Architect - Professional (Cloud)</p> <p><u>Systems Administration certifications</u> Red Hat Certified Architect (RHCA) CompTIA Linux+ Microsoft Certified Azure Solutions Architect Expert HP Accredited Technical Professional (ATP - all) AWS Certified SysOpsAdministrator-Associate (Cloud)</p>	<p><u>Application Development/Programming Languages certifications</u> Salesforce Certified Platform Developer IBM Certified Application Developer (all) JBoss Certified Developer (Seam, Persistence, ESB)</p> <p><u>Architecture, Project Management, and Process Certifications</u> Google Certified Professional Cloud Architect Six Sigma Yellow Belt</p> <p><u>Data/Database certifications</u> SAS Certified Data Scientist Using SAS 9 Teradata 14 Certified Associate Teradata 14 Certified Technical Specialist Teradata 14 Certified Professional Teradata 14 Certified Database Administrator Teradata 14 Certified Enterprise Architect Teradata 14 Certified Master</p> <p><u>General/Foundation Level certifications</u> CompTIA A+</p> <ul style="list-style-type: none"> • Certified Computer Examiner • Certified Cyber Forensics Professional • Certified in the Governance of Enterprise IT • Certified ScrumMaster • Cisco Certified Architect • CyberSecurity Forensic Analyst • EC-Council Certified Encryption Specialist • GIAC Exploit Researcher and Advanced Penetration Tester • GIAC Security Expert • GIAC Security Leadership • InfoSys Security Architecture Professional (ISSAP/CISSP) • PMI Program Management Professional • PMI Risk Management Professional • Zachman Certified - Enterprise Architect

Source: Foote Partners [IT Skills & Certifications Pay Index™](#), 1st Quarter 2021 data edition

IT CERTIFICATIONS PAY TREND HIGHLIGHTS: Market Value Losers – 1st Quarter 2021 data

These tech IT certifications **declined 10% or more in market value in the three months ending April 1, 2021** vs. prior quarter (grouped by segment). **Listed in descending order** of amount of % decline, including ties.

TECH CERTIFICATIONS Losers

Application Development/Programming

Languages

Siebel 8 Consultant Certified Expert
TIBCO Certified Architect
Oracle Certified Professional - Fusion Middleware 11g Forms Developer
Microsoft Certified Solutions Developer: Applications Builder
Oracle Certified WebLogic Server System Administrator Certified Expert
TIBCO Certified Professional
Pegasystems Certified Lead System Architect
Salesforce Certified Application Architect

Data/Database

Microsoft Certified Solutions Associate: BI Reporting
Microsoft Certified Solutions Associate: SQL 2016 DBA
Microsoft Certified Solutions Associate: SQL Server 2012/2014/2016
Microsoft Certified Solutions Expert: Data Platform
EMC Data Science Associate
Microsoft Certified Solutions Expert: Data Management and Analytics

Info/Cyber Security certifications

CompTIA Advanced Security Practitioner (CASP)
GIAC Information Security Professional (GISP)
Cisco Certified Network Professional - Security
GIAC Certified Incident Handler (GCIH)
Check Point Certified Security Expert (CCSE)
EC-Council Computer Hacking Forensic Investigator (CHFI)
GIAC Reverse Engineering Malware (GREM)
GIAC Certified Intrusion Analyst (GCI)
Systems Security Certified Practitioner (SSCP)

Systems Administration certifications

AWS Certified SysOpsAdministrator-Associate (Cloud)
Citrix Certified Associate - Networking
NetApp Certified Data Administrator, ONTAP (NCDA)
NetApp Certified Implementation Engineer (NCIE)
Citrix Certified Professional - Networking
Citrix Certified Professional-Virtualization (CCP-V)
Citrix XenServer Certified (CC-XenServer)
Citrix Certified Expert - Networking
Citrix Certified Expert - Virtualization
EMC Data Center Architect (EMCDCA - all versions)
EMC System Administrator, Documentum Specialist (EMCSyA)

Networking and Communications

Cisco Certified Entry Network Technician (CCENT)
Cisco Certified Network Associate (was Design Associate)
Cisco Certified Network Associate (CCNA Routing and Switching)
Cisco Certified Network Professional (was CC Design Professional)
Cisco Certified Network Professional - Collaboration
Cisco Certified Network Professional - Data Center (CCNP Cloud)
Cisco Certified Network Professional (CCNP)
CWNP/Certified Wireless Network Expert (CWNE)
Cisco Certified Network Associate (was CCNA Cloud)

Architecture, Project Management, and Process Certifications

ITIL Foundation Certification
Prince2 Foundation
ITIL Master
Prince2 Practitioner

Source: Foote Partners [IT Skills & Certifications Pay Index™](#), 1st Quarter 2021 data edition

CERTIFICATION ANALYSIS – Pandemic Winners/Losers

HIGH-PAYING TECH CERTIFICATIONS ALSO LOSING THE MOST MARKET VALUE FROM 2020 to 2021

The average market value for 540 tech certifications **decreased 1.1 percent** overall in the first quarter of 2021, the eleventh consecutive calendar quarter of **losses that total more than 12 percent over the same period**. Pay premiums for single certifications are averaging the equivalent of 6.7% of base salary in 1st Quarter 2021.

Why have more certifications been losing value than gaining value?

Certifications decline in market value for a number of obvious and not so obvious reasons. Pay premiums may diminish as a certification expires, is retired, or is replaced with more appropriate certifications as technology evolves. Also, there remains a lingering bias that taking a proctored exam does not confer expertise in a subject on the test taker, especially when the pass rate is 70 percent correct answers. The certification industry has fought back against this bias by adding laboratory requirements and even peer review panels that decide if the candidate has qualified to receive designation.

But just as often it's their popularity that drives down pay premiums for a certification: as interest in a certification escalates and more people attain the certification the gap between supply and demand for the certification narrows, driving down its market value as the laws of scarcity would dictate. This has been documented in the case of dozens of certifications over the 20 years Foote Partners has been tracking and reporting their cash pay premiums in the ***IT Skills and Certifications Pay Index***.

* * *

The following tech certifications are distinctive for two reasons:

- They **lost the most in cash market value** in the **twelve months ending 4/1/2021**
- They are **still earning cash pay premiums significantly higher than the average** of all 540 certifications being reported.

As referenced above, many are attracting more attention from workers looking to improve their job and career prospects by attaining the certifications, thereby narrowing the gap between supply and demand.

- Certified Cloud Security Professional (CCSP)
- Certified Forensic Computer Examiner (CFCE)
- Certified in Risk and Information Systems Control (CRISC)
- Certified Information Systems Auditor (CISA)
- Certified Information Systems Security Professional (CISSP)
- Check Point Certified Security Master (CCSM)
- Certified Secure Software Lifecycle Professional (CSSLP)
- Check Point Certified Security Expert (CCSE)
- Cloudera Certified Professional: Data Engineer
- EC-Council Certified Security Analyst (ECSA)
- EC-Council Licensed Penetration Tester (LPT)
- GIAC Certified Enterprise Defender (GCED)
- GIAC Certified Forensics Analyst (GCFA)
- GIAC Certified Penetration Tester (GPEN)
- InfoSys Security Architecture Professional (CISS-/ISSAP)
- PMI Portfolio Management Professional (PMP)
- PMI Professional in Business Analysis (PMI-PBA)
- PMI Program Management Professional (PgMP)
- PMI Project Management Professional (PMP)

CERTIFICATION ANALYSIS - cont'd.

1. PMI Program Management Professional (PgMP)

Average Pay Premium: 12 percent of base salary equivalent

Market Value Decrease: -14.3 percent (in the twelve months through April 1, 2021)

The highly regarded Project Management Institute (PMI) is perhaps best known for its Project Management Professional (PMP) credential but it also offers the **PMI Program Management Professional (PgMP)**, often considered the next step after the PMP. This certification addresses the community of professionals who are responsible for the coordinated management of multiple projects that are in alignment with organizational objectives and therefore required to direct and manage complex activities that may span functions, organizations, cultures and geographies.

2. InfoSys Security Architecture Professional (CISS-ISSAP)

Average Pay Premium: 12 percent of base salary equivalent

Market Value Decrease: -7.7 percent (in the twelve months through April 1, 2021)

The **CISSP-Information Systems Architecture Professional** is an appropriate credential if you're a chief security architect or analyst, or work as an independent consultant or in a similar capacity. As the architect, you play a key role in the information security department. Your responsibilities fall between the C-suite and upper managerial level and the implementation of the security program. Although your role is tied closely to technology, it may be closer to the consultative and analytical process of information security.

This security architect certification proves your expertise developing, designing and analyzing security solutions. It also shows you excel at giving risk-based guidance to senior management in order to meet organizational goals. CISSP-ISSAP Domains:

- Domain 1. Architect for Governance, Compliance and Risk Management
- Domain 2. Security Architecture Modeling
- Domain 3. Infrastructure Security Architecture
- Domain 4. Identity and Access Management (IAM) Architecture
- Domain 5. Architect for Application Security
- Domain 6. Security Operations Architecture

3. Certified Forensic Computer Examiner (CFCE)

Average Pay Premium: 11 percent of base salary equivalent

Market Value Increase: -21.4 percent (in the twelve months through April 1, 2021)

The International Association of Computer Investigative Specialists (IACIS), the organization behind the **Certified Forensic Computer Examiner** credential, caters primarily to law enforcement personnel. In fact, you must be employed in law enforcement to qualify for the CFCE. To obtain the CFCE credential there is a two-step process that includes a peer review and CFCE certification testing:

- The peer review consists of accepting and completing four assigned practical problems based on core knowledge and skills areas for the credential. These must be solved and then presented to a mentor for initial evaluation before being presented for peer review. Candidates have 30 days to complete each of the practical problems.
- Upon successful conclusion of the peer review, candidates automatically progress to the certification phase.
- Candidates must begin work on a hard-drive practical problem within seven days of the completion of the peer review phase. Forty days are allotted to candidates to independently analyze and report upon a forensic image of a hard drive provided to them. Following specific instructions, a written report is prepared to document the candidate's activities and findings.

Once that report is accepted and passed, the process concludes with a 100-question written exam. Candidates have 14 days to complete the written examination. A passing score of 80 percent or better is required for both the forensic report and the written exam to earn the CFCE.

CERTIFICATION ANALYSIS - cont'd.

4. **GIAC Certified Forensics Analyst (GCFA)**

Average Pay Premium: 11 percent of base salary equivalent

Market Value Increase: -15.4 percent (in the twelve months through April 1, 2021)

The **GIAC Certified Forensics Analyst** focuses on computer forensics in the context of investigation and incident response, and thus also focus on the skills and knowledge needed to collect and analyze data from Windows and/or Linux computer systems during such activities. It certifies that candidates have the knowledge, skills, and ability to conduct formal incident investigations and handle advanced incident handling scenarios, including internal and external data breach intrusions, advanced persistent threats, anti-forensic techniques used by attackers, and complex digital forensic cases. The GCFA certification focuses on core skills required to collect and analyze data from Windows and Linux computer systems.

GCFAs are front line investigators during computer intrusion breaches across the enterprise. They can help identify and secure compromised systems even if the adversary uses anti-forensic techniques. Using advanced techniques such as file system timeline analysis, registry analysis, and memory inspection, GCFAs are adept at finding unknown malware, rootkits, and data that the intruders thought had been eliminated from the system.

Areas of expertise covered in this certification include:

- Advanced Incident Response and Digital Forensics
- Memory Forensics, Timeline Analysis, and Anti-Forensics Detection
- Threat Hunting and APT Intrusion Incident Response

These are the most common roles for GPEN certificants:

- Incident Response Team Members
- Threat Hunters
- SOC Analysts
- Experienced Digital Forensic Analysts
- Information Security Professionals
- Federal Agents and Law Enforcement Professionals
- Red Team Members, Penetration Testers, and Exploit Developers
- GCFE and GCIH Cert Holders

5. **[Tie] Certified Cloud Security Professional (CCSP)** **Certified Information Systems Auditor (CISA)** **Certified Information Systems Security Professional (CISSP)** **Check Point Certified Security Master (CCSM)** **GIAC Certified Penetration Tester (GPEN)**

Average Pay Premium: 11 percent of base salary equivalent

Market Value Increase: -8.3 percent (in the twelve months through April 1, 2021)

The **Certified Cloud Security Professional** from (ISC)² is a comprehensive global certification that covers core specialty areas like cloud application security and cloud platform security, recognizing IT and information security leaders who have the knowledge and competency to apply best practices to cloud security architecture, design, operations and service orchestration. Holders of this certification have a deep knowledge and hands-on experience with cloud security architecture, design, operations and service orchestration. Qualifying for this certification has a prerequisite of 5 years of cumulative, paid, full-time work experience in information technology; 3 years of that experience must be in information security. One year experience can be in any of the CCSP common body of knowledge (CBK) six domain areas. You can reduce the prerequisite to 4 years of work experience if you have the Cloud Security Knowledge (CCSK) certification.

CERTIFICATION ANALYSIS - cont'd.

Globally recognized, ISACA's **Certified Information Systems Auditor** is the gold standard for IT professionals seeking to practice in information security, audit control and assurance. Ideal candidates are able to identify and assess organizational threats and vulnerabilities, assess compliance, and provide guidance and organizational security controls. CISA-certified professionals are able to demonstrate knowledge and skill across the CISA job practice areas of auditing, governance and management, acquisition, development and implementation, maintenance and service management, and asset protection.

To earn the CISA, candidates must pass one exam, submit an application, agree to the code of professional ethics, agree to the continuing professional education requirements, and agree to the organization's information systems auditing standards. In addition, candidates must possess at least one year of experience working with information systems. Some substitutions for education and experience with auditing are permitted.

The **Certified Information Systems Security Professional** is an advanced-level certification offered through the (ISC)² that demonstrates your knowledge and abilities with IT security and information assurance. It is designed for experienced security professionals, covering topics such as organizational structure, security and risk management, asset security, security operations, identity and access management (IAM), security assessment and testing and security architecture and engineering. You need at least five years of cumulative, paid work experience in two or more of the eight domains included in the (ISC)² CISSP Common Body of Knowledge: security and risk management, asset security, security architecture and engineering, communications and network security, identity and access management, security assessment and testing, security operations, and software development security.

The **Check Point Certified Security Master** certification recognizes and validates technical mastery of the Check Point Infinity architecture. It is awarded to cybersecurity professionals with advanced knowledge and expertise in configuring, deploying, managing, and troubleshooting various Check Point products and services. Security professionals with an active Check Point Certified Security Expert certification that achieve two subsequent Infinity Specialist accreditations will automatically be awarded the CCSM certification.

The **GIAC Certified Penetration Tester certification** validates a practitioner's ability to properly conduct a penetration test, using best practice techniques and methodologies. GPEN certification holders have the knowledge and skills to conduct exploits and engage in detailed reconnaissance, as well as utilize a process-oriented approach to penetration testing projects.

Areas of expertise covered in the GPEN include:

- Comprehensive Pen Test Planning, Scoping, and Recon
- In-Depth Scanning and Exploitation, Post-Exploitation, and Pivoting
- In-Depth Password Attacks and Web App Pen Testing

These are the roles most common roles for GPEN certificants:

- Security personnel responsible for assessing networks and systems to find and remediate vulnerabilities
- Penetration testers
- Ethical hackers
- Red Team and Blue Team members
- Defenders, auditors, and forensic specialists who want to better understand offensive tactics

10. Certified Secure Software Lifecycle Professional (CSSLP)

Average Pay Premium: 10 percent of base salary equivalent

Market Value Increase: -23.1 percent (in the twelve months through April 1, 2021)

Like other (ISC)² certifications, the **Certified Secure Software Lifecycle Professional** is a vendor-neutral credential relevant to many kinds of programming and development projects. Aimed at software developers, engineers, architects, QA and penetration testers, security specialists and the like, the CSSLP recognizes competency in securing applications throughout the software development lifecycle.

Prerequisites include at least four years' full-time work-related experience in the software development lifecycle (SDLC) in at least one of eight CSSLP domains, or three years' experience plus a bachelor's degree or equivalent in an IT-related field such as computer science or

CERTIFICATION ANALYSIS - cont'd.

information technology. The required exam covers all phases of this lifecycle, including secure software concepts, requirements, design, implementation and coding, and testing. Candidates should also be up to speed on the eight CSSLP Common Body of Knowledge (CBK) domains which include software concepts, requirements, design, implementation/programming, testing, lifecycle management, deployment, and operations.

11. [Tie] Certified in Risk and Information Systems Control (CRISC)

Cloudera Certified Professional: Data Engineer

EC-Council Licensed Penetration Tester (LPT)

PMI Portfolio Management Professional (PfMP)

PMI Professional in Business Analysis (PMI-PBA)

Average Pay Premium: 10 percent of base salary equivalent

Market Value Increase: -16.7 percent (in the six months through April 1, 2021)

The **Certified in Risk and Information Systems Control (CRISC)** is a certification program that recognizes knowledge and training in the field of IT risk management. CRISC can provide IT security professionals with a visible marker of experience and knowledge in risk management for enterprise and financial sectors. The certification is useful for independent consultants, as well as those working for enterprise directly in IT operations, security and other areas. Professionals certified in CRISC create a greater understanding of information technology risks and how they impact an entire organization. Furthermore, they devise plans and strategies for mitigating those risks. Finally, CRISC professionals establish a common language to facilitate communication and understanding between the IT groups and stakeholders.

CRISC breaks down areas of risk management specialization into 4 domains: identifying risks; assessing risks; responding to and mitigating risks; controlling, monitoring and reporting about risks. Within these domains, CRISC measures an individual's ability to deal with risks in an enterprise business and to use information system controls.

Prerequisites for CRISC include three years' experience in a risk management role with one year at least in domain 1 or 2. Candidates must agree to uphold the ISACA professional code of ethics and comply with the continued education policy. The certification has one requisite exam with 150 questions.

Cloudera's **Certified Professional (CCP) Data Engineer** is a certification that enhances your data engineering skills to become a professional engineer. Moreover, this certification proves that you are a reliable developer and data analyzer who can help in optimizing data sets for a variety of workloads by understanding data ingest, data transformation, data storage, and data analysis. Likewise, it illustrates that you can tackle data into a clean, useful platform, which can be used vastly by different people, for various purposes. An experienced open-source developer who earns the CCP-Data Engineer credential is able to perform core competencies required to ingest, transform, store, and analyze data in Cloudera's CDH environment.

CCP Data Engineers possess the skills to develop reliable, autonomous, scalable data pipelines that result in optimized data sets for a variety of workloads. In other words: CCP Data Engineer demonstrates that you can wrangle data into a clean, useful shape that can be used by different people, for different purposes.

All Cloudera exams are open to everyone without any prerequisite, training, certification, or otherwise. You should, however, have a high-level of mastery of data ingest, data transformation/state/store, data analysis, and workflow (i.e., the ability to create and execute various jobs and actions that move data towards greater value and use in a system.)

Penetration testing is the process of exploiting known vulnerabilities in a network. Network security has become extremely popular, especially after critical events such as 9-11. Organizations are extremely aware of how important it is to ensure their network is not being exploited to cyberattacks---which can cost a company millions of dollars---so the investment in hiring a Penetration Tester is well worth the cost. **EC-Council's Licensed Penetration Tester (LPT)** is an expert-level EC-Council certification and typically the next step after earning their Certified Ethical Hacker and Certified Security Analyst. To get the LPT you progress through three different levels, each containing three challenges, in real-life scenarios involving a hardened infrastructure. Each level is a six-hour exam. The candidate

CERTIFICATION ANALYSIS - cont'd.

has a limited time to work against a multi-layered network architecture that has defense-in-depth controls and make multiple decisions related to what exploits and approaches to use as you maneuver through the network and web applications in an attempt to exfiltrate data.

The highly regarded Project Management Institute (PMI) is perhaps best known for its Project Management Professional (PMP) credential (which is discussed on the next page). But the fact is that formal portfolio management is the most effective way to implement strategic initiatives because it bridges the gap between strategy and implementation and promotes the meeting of ROI objectives. The PMI's **Portfolio Management Professional** signifies advanced competency in the coordinated management of one or more portfolios to achieve strategic objectives. Organizations with mature project portfolio management practices complete 35 percent more of their programs successfully according to a 2015 PMI-published thought leadership report entitled "Delivering on Strategy: The Power of Project Portfolio Management".

The *PfMP* is intended for executive or senior-level practitioners managing a portfolio of projects and programs aligned with organizational strategy and focused on doing the right work, Prerequisites include:

- All applicants must possess a minimum of 96 months of professional business experience within the last 15 years AND
- Secondary degree (high school diploma, associate's degree or the global equivalent)
- 84 months of portfolio management experience

--OR--

- All applicants must possess a minimum of 96 months of professional business experience within the last 15 years AND
- Four-year degree (bachelor's degree or the global equivalent)
- 48 months of portfolio management experience

Inaccurate requirements gathering consistently ranks in the top three causes of project failure yet only half of organizations have the resources in place to perform this function properly according to Project Management Institute research. This is why business analysis is a topic of immense importance to projects and programs. The marketplace reflects this importance, as practitioners increasingly embrace techniques for uncovering business needs, managing requirements, and creating effective solutions to business problems. The **PMI Professional in Business Analysis** certification promotes this by recognizing an individual's expertise in business analysis using these tools and techniques to improve the overall success of projects. It requires a combination of business analysis training, experience working on projects, and examination on business analysis principles, practices, tools, and techniques.

16. [Tie] Check Point Certified Security Expert (CCSE) EC-Council Certified Security Analyst (ECSA) GIAC Certified Enterprise Defender (GCED) PMI Project Management Professional (PMP)

Average Pay Premium: 10 percent of base salary equivalent

Market Value Increase: -9.1 percent (in the twelve months through April 1, 2021)

The **Check Point Certified Expert** certification is for network and security administrators who have in-depth skills and expertise in managing and supporting Check Point products. It validates the ability to build, modify, deploy and troubleshoot Check Point Security Systems on the GAIa unified secure operating system. The CCSE certifies the following abilities:

- Defend against network threats
- Evaluate existing security policies and optimize the rule base
- Manage user access to corporate LANs
- Monitor suspicious network activities and analyze attacks
- Troubleshoot network connections
- Implement Check Point backup techniques

CERTIFICATION ANALYSIS - cont'd.

The **EC-Council Certified Security Analyst** is a certification that builds on previous certs like EC-Council's Certified Ethical Hacker (CEH) certification. It teaches advanced security techniques and Licensed Penetration Tester (LPT) methodologies to cybersecurity professionals. Although not mandatory, it is a good cybersecurity career strategy to acquire CEH certification before getting completely involved in the ECSA process which goes beyond the standard ethical hacking skill set by incorporating hands-on lab sessions dedicated to penetration testing. The ECSA prepares cybersecurity professionals for analyzing the results of hacking techniques and the technological tools involved and is an excellent choice for mid-level security managers as well as security architects, security consultants, and penetration testers.

The **GIAC Certified Enterprise Defender** certification builds on the security skills measured by the GIAC Security Essentials certification. It assesses more advanced, technical skills that are needed to defend the enterprise environment and protect an organization as a whole. GCED certification holders have validated knowledge and abilities in the areas of defensive network infrastructure, packet analysis, penetration testing, incident handling and malware removal. Areas covered by this certification include:

- Incident handling and computer crime investigation
- Computer and network hacker exploits
- Hacker tools (Nmap, Nessus, Metasploit and Netcat)

Project management is on every list of hot IT jobs, skills, and certifications because seasoned project managers are critically important to IT and business operations of all kinds. Moreover, if there's a single set of process and methodology skills for which demand has been firmly established year-after-year in the more than two decades that Foote Partners has been reporting cash pay premiums its quarterly-updated [IT Skills and Certifications Pay Index](#), it's probably project management. The **Project Management Professional** certification from the Project Management Institute is arguably the most highly regarded certification in project management, attracting more than 1 million certificants worldwide. But with such immense popularity comes a narrowing of the gap between supply and demand for the PMP, and this has driven down its cash market value by almost 10% in the last twelve months.

The standards for PMP certification are rigorous. Beyond passing a comprehensive exam, credential holders must first demonstrate and certify that they have the skills and education necessary to succeed in the project management field. Credential seekers are required to provide documentation for items such as education, projects worked on and hours spent in each of the five project management stages – initiating, planning, executing, monitoring and controlling, and closing out the project. In fact, to sit for the PMP exam a candidate has to show verifiable evidence of 7,500 hours of experience in leading and directing projects (or 4,500 hours if the candidate has a bachelor's degree or better) to sit for the exam).

Q2 2020 Trend Charts

2021 IT Skills & Certifications Volatility Index™

(Data collected through April 1, 2021)

Demand dynamics in benchmarked certified and non-certified IT skills pay

What is skills and certifications volatility?

Skills volatility is defined as the incidence of gains or declines in premium pay earned by tech professionals for specific certified and noncertified technical and business skills. Tracking volatility is useful for both analyzing and forecasting demand for skills, for monitoring IT workforce transition, and for understanding IT management decision making. Volatility offers valuable insights that salary movements and hiring behavior do not. Important in this distinction is that skills can be segmented and benchmarked more meaningfully than jobs. Similar to IT positions, there are the broad categories (e.g., security, networking, systems, database, applications development). But also, more narrow areas, for example--web/e-commerce development, storage area networking, virtualization, architecture, business process, project management, methodology. But unlike most jobs, within categories or niche are very specific vendor-specific or vendor independent niches and skill specializations that provide more granular analysis (e.g., SAP, AJAX, Ruby on Rails, Microsoft Sharepoint, collaboration appliances, Oracle database).

TRENDS Cash Pay Premium Volatility for IT Skills and Certifications

Volatility in market value for individual IT skills and certifications—defined as incidence of gains or declines over a period of time in premium pay earned by IT professionals for specific technical and business skills—increased from January 1, 2021 to April 1, 2021 according to the latest update of Foote Partners' long-running *IT Skills and Certifications Pay Index™* of market values for tech skills. Market value is measured by tracking additional cash compensation paid to workers by their employers for specific certified and non-certified skills they possess.

Current Quarterly Recap (data collected through April 1, 2021)

TOTAL: All Skills and Certifications

- 27% of skills and certifications (304 of 1,127) changed in market value in 1st Quarter 2021 compared to 27.8% in the prior quarter. Average volatility in the prior year 2020 measured 27.3%.
- 109 gained value and 195 declined in value in the first quarter of 2021.

CERTIFIED SKILLS

- 16% of reported certifications (84 of 525) changed market value in 1st Quarter 2020, higher than the 14.5% in the prior quarter but **four points lower than the 20% volatility for the 2020 calendar year.**
- 29 certifications gained market value; 55 declined in value in 1Q.

NON-CERTIFIED SKILLS

- 36.5% of reported skills (220 of 602) changed value in 1st Quarter 2020, three points lower than the 39.4% in the prior quarter and **three points lower than 33.5% average volatility for the 2020 calendar year.**
- 80 noncertified skills gained in market value; 140 declined in value in 1Q.

Tracking skills volatility is useful in many ways: analyzing and forecasting demand for skills; monitoring IT workforce transition; and understanding IT management decision making. In fact, we believe statistical volatility in IT skills pay offers a more complete story of true labor market conditions than salary movements and hiring behavior, among other common indicators. Important in this distinction is that skills can be segmented and benchmarked more meaningfully than jobs allowing to microanalyses.

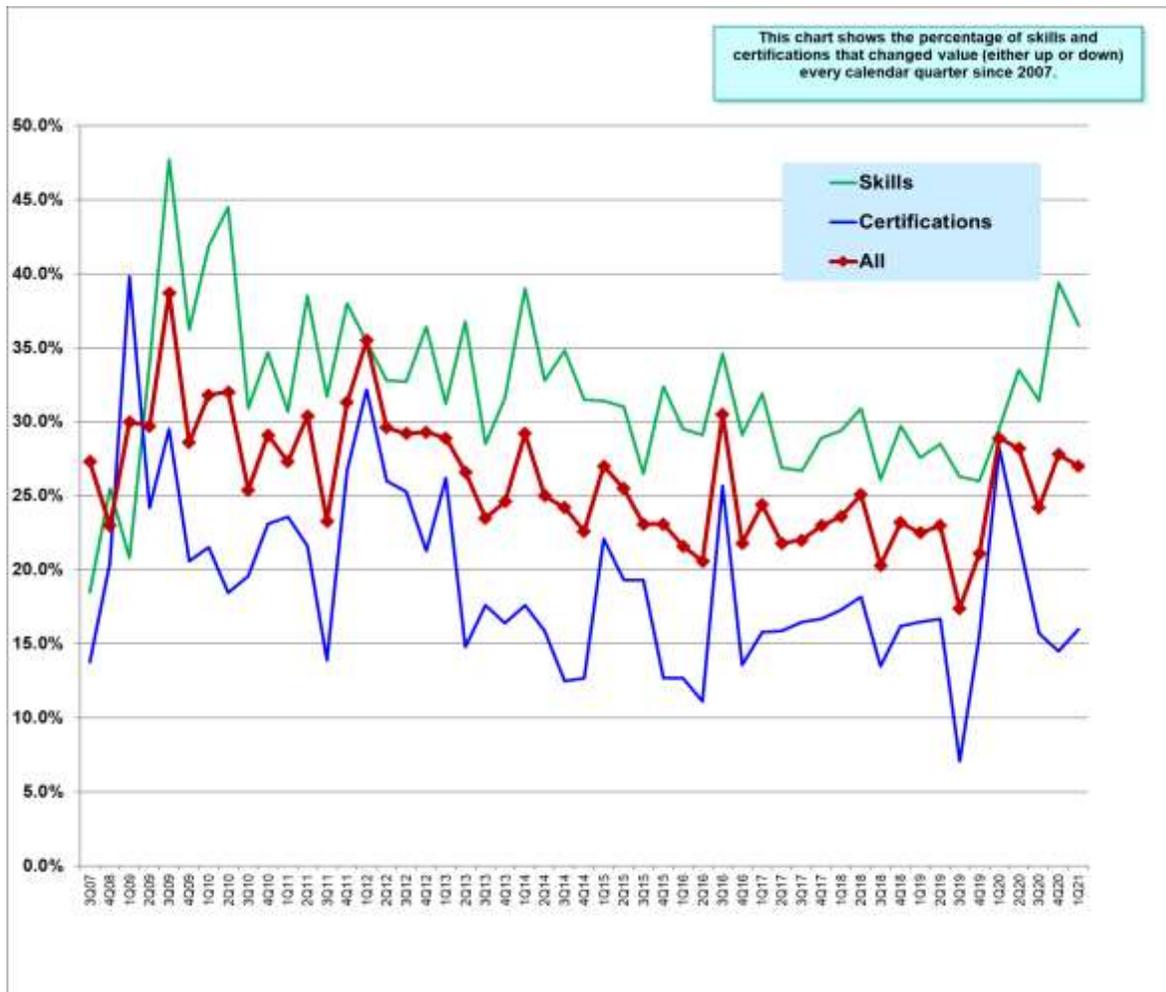
Similar to jobs, IT skills have broad skills categories that can be tracked (e.g., security, networking, systems, database, applications development). But unlike jobs, skills pay can be pinpointed to hundreds of niches and specialization. Also, unlike most job trends analyses, within skills categories and niches are *vendor-specific* and *vendor independent* skill specializations for more granular tracking, analysis, and forecasting.

Skills and certifications volatility prior to 2008 averaged in the 14% - 19% range. Quarterly volatility in the last two years has been in the 20% to 31% range. This is an important shift that we believe signals a move that employers are taking a more long-term view to building their tech workforces for emerging technologies such as Blockchain, AI/Machine learning, and a variety of digital solutions. Tech leaders right now are demanding more agility, faster reaction times, and more predictable execution; this is keeping volatility high as skills markets constantly adjust to meet surges in demand for specific certified and non-certified skills.

They will be able to achieve those capabilities through applying architecture principles and practices to people management.
We discuss this in greater detail earlier in this report.

VOLATILITY HIGHLIGHTS - 15 Year Trending

IT Skills and Certifications Volatility Index™ – 1,153 Skills and Certifications



Recent IT skills and certifications volatility trends

QUARTERLY SUMMARY

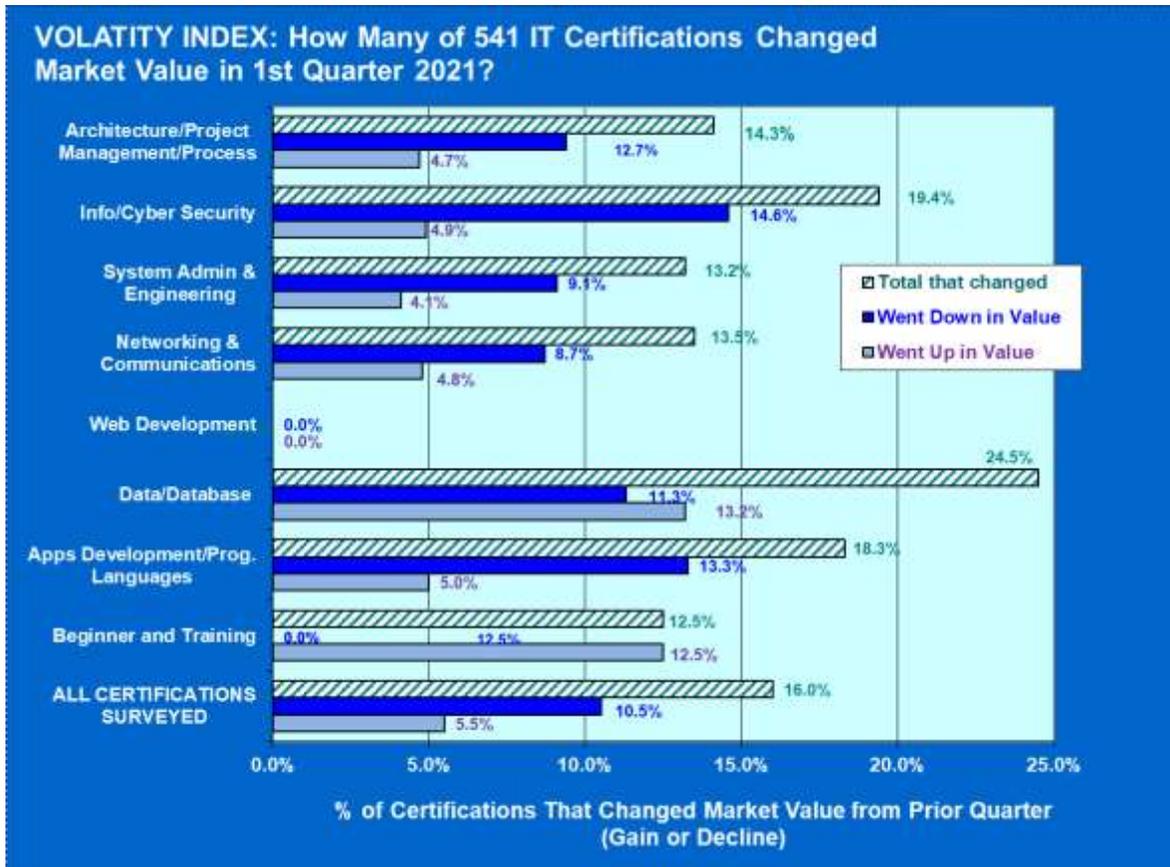
1st Quarter 2021 volatility in skills and certifications values is only slightly higher than average volatility for calendar year 2020 but still exceeds the 2-year average, a sign that it is reaching a balance point now one the one-year point of an economic recession.

NONCERTIFIED SKILLS VOLATILITY in 1Q 2021 (36.5%) recorded the second highest volatility in a single quarter since early 2014, three points less than the prior calendar quarter.

IT CERTIFICATIONS VOLATILITY in 1Q 2021 rose to 16% from 14.5% in the prior quarter. This is significantly lower than the 20% average volatility in 2020 calendar year.

(Pay data supporting these charts available in the [IT Skills and Certifications Pay Index™](#) – 2007 to 2021 quarterly data edition)

VOLATILITY HIGHLIGHTS IT Certifications – 1st Quarter 2021 data



(Source: Foote Partners LLC, [2021 IT Skills & Certifications Pay Index™](#))

IT Skills and Certifications Volatility Index™
1Q 2021 data edition findings: Tech Certifications

IT Certifications Volatility Highlights

Among all 540 certifications surveyed, highest volatility ($\geq 15\%$) occurred in these segments (ranked highest to lowest):

- Data/Database
- Info/Cybersecurity
- Applications Development

Within segments, notable upward volatility (value **gains**) occurred most in these:

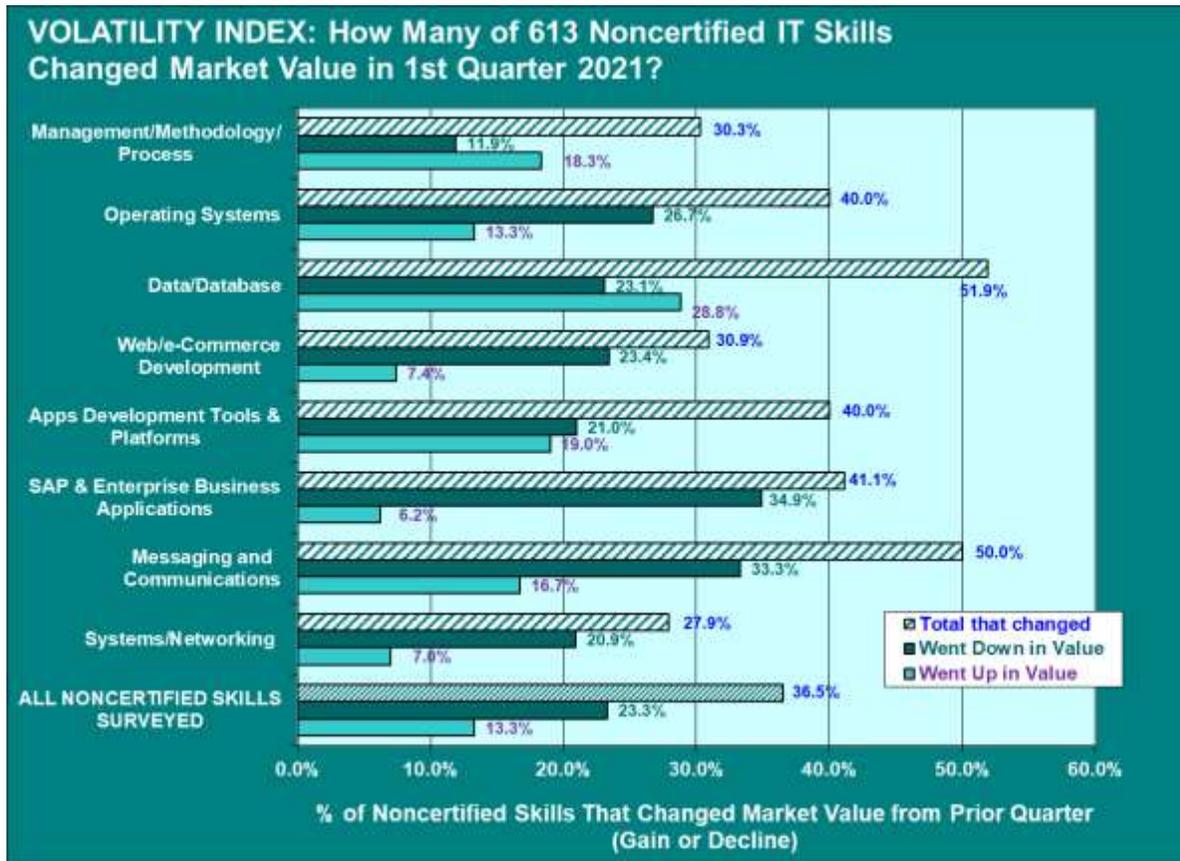
- Data/Database
- Beginning and Training

Within segments, notable downward volatility (value **declines**) occurred most in these (ranked):

- Info/Cybersecurity
- Applications Development
- Data/Database

(Pay data supporting these charts available in the [IT Skills and Certifications Pay Index™](#) – 2007 to 2021 quarterly data edition)

VOLATILITY HIGHLIGHTS Non-certified IT Skills – 1st Quarter 2021 data



IT Skills and Certifications Volatility Index™
1Q 2021 data edition findings: Non-certified IT Skills

Noncertified IT Skill Pay Volatility Highlights

Among all 613 noncertified IT skills surveyed, high volatility (>20%) occurred in all but one segments (ranked highest to lowest):

- Data/Database
- Messaging and Communications
- SAP & Enterprise Business Apps
- Applications Development Tools & Platforms
- Operating Systems
- Web/E-commerce Development
- Management/Methodology/Process
- Systems/Networking

Within segments, notable upward volatility (value gains) occurred most in these (ranked):

- Applications Development Tools & Platforms
- Management/Methodology/Process
- Data/Database
- Operating Systems

Within segments, notable downward volatility (value declines) occurred most in these (ranked):

- SAP & Enterprise Business Apps
- Messaging and Communications
- Operating Systems
- Web/E-commerce Development
- Data/Database

(Pay data supporting these charts available in the [IT Skills and Certifications Pay Index™](#) – 2007 to 2021 quarterly data edition)

2021 IT Skills and Certifications Pay Index™ (1stth Quarter Data edition)

- Pay premiums for **1,153 certified and noncertified IT skills**
 - Three data points for each position: 10th, 50th, 90th percentile
- Verified and validated IT skills pay data from **83,274 IT professionals at 3,745 employers** in US and Canada
- Current data collected through April 1, 2021 (updated quarterly)
- Excel format data tables. Master agreements for data loading in place with Payscale/MarketPay, CompAnalyst, WillisTowersWatson.
- Certifications Guide containing basic information about surveyed IT certifications (pre-requisites; costs; test content; lab requirements, etc.)

Pricing: \$5,800 single edition. \$19,800 annual subscription

Definition of IT skills premium pay

- Pay that IT workers receive for possessing high-value IT and business skills used on the job
- Given in the form of a bonus, or embedded in base salary to adjust for the presence of a dominant vendor or technology central to job performance (examples: Cisco Network Engineer, Python Software Engineer, Redhat Linux Systems Administrator, or SAP Developer.)
- Often used to adjust either base pay or total pay in situations where job title does not match actual on-the-job duties and responsibilities, and changing the job title is not an attractive option
- May be used as a reward, recruiting inducement, retention tool, or as a guide for creating consulting rate cards

ABOUT THIS RESEARCH

Foote Partners' primary research survey for tracking IT skills and certifications pay and supply/demand volatility is the industry-leading ***IT Skills and Certifications Pay Index™ (ITSCPI)***, launched in 1999 and updated every three months since that time. Data covering 339,868 tech professionals at 3,745 employers in 83 U.S. and Canada cities are reported for IT salaries and skills pay earned for 250 positions and 1,153 certified and noncertified technical and business skills. Verified and validated pay data for 83,274 tech workers has been included in the 1st Quarter 2021 data edition of the ITSCPI, compiled from data collected through April 1, 2021.

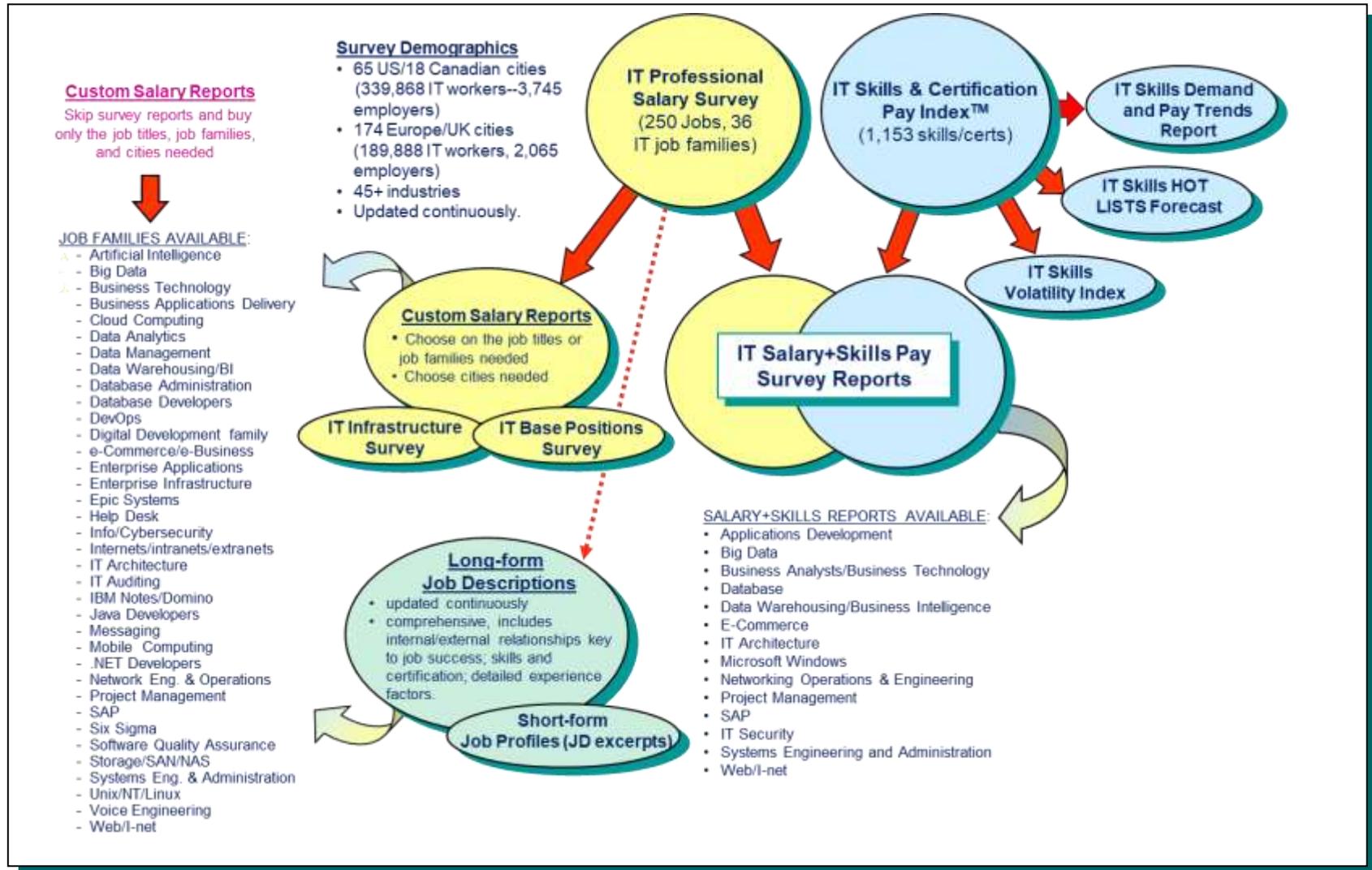
Demographics of the participating organizations for our latest update are as follows, measured most appropriately for the type of business, by revenues, assets, total premiums and operating budgets:

- 18% of participating organizations have \$5 billion+ in sales/\$15+ billion in total assets
- 28% of participating organizations earn more than \$1 billion in annual revenues or more than \$5 billion in total assets
- 46% of participating organizations have \$500+ million in sales/\$1+ billion in total assets/\$500+ million in premiums/\$500+ million operating budget (government, educational, not-for-profit)
- 54% of participating organizations fall in the SMB (small-to-medium sized business) segment, generally defined as organization under \$500 million in sales.
- [Public sector] 5% have operating budgets of \$500 million or more, [nonprofit/educational sectors] 4% with operating budgets \$100 million to less than \$500 million

TO OBTAIN A COPY OF THE LATEST ***IT SKILLS AND CERTIFICATIONS PAY INDEX™***

Please visit the Foote Partners web site: [IT Skills and Certifications Pay Index](#)

Foote Partners 1Q 2021 IT Compensation Survey Product Map



ABOUT FOOTE PARTNERS

Foote Partners, LLC is a technology analyst firm and independent benchmark research organization focusing on the people (versus vendor) side of managing technology and technology value creation. A thought leader and trusted advisor to thousands of employers on five continents who purchase our products and services, our company provides pragmatic benchmark research and forward-thinking advice and market intelligence targeting the tech workforce in the modern highly integrated business/IT hybrid environment in which all private and public organizations now operate.

Our products are deeply grounded in specialized proprietary data-driven statistical and empirical research, benchmark surveys, and business intelligence collected from thousands of North American employers with whom we have deep longstanding research partnerships. These partnerships have been created and supported specifically to enable unique market intelligence views and difficult-to-find decision support research on the multiple facets of IT human capital management. As a group, these U.S., Canadian, and European partners were selected to meet strict criteria for what we believe is the most meaningful demographic representation for tech professionals in each local labor markets.

Founded in 1997 and comprised of former Gartner industry analysts, McKinsey & Company, Mercer and WillisTowersWatson senior consultants, and former corporate HR, IT, and business executives, the firm's research division publishes 70+ quarterly-updated benchmarking, analytical research and forecasting products that help employers benchmark their IT compensation, solve difficult information technology management and workforce problems, and strengthen their ability to execute complex business solutions.

Foote Partners tech compensation survey findings and labor market trend analyses are featured regularly in countless business, HR, and IT media sources and periodicals around the globe, including *Bloomberg BusinessWeek*, *Forbes*, *Fortune*, *Wall Street Journal*, *New York Times*, *CIO Magazine*, *ComputerWorld*, and *WorldatWork's Journal* and *Workspan Magazine*; and in appearances on network and cable television, National Public Radio, and countless podcasts and webcasts.

Headquarters:

4445 North A1A, Suite 200
Vero Beach, FL 32963
Tel: 772-234-2787
www.footepartners.com
Twitter: [@FPview](https://twitter.com/FPview)
Blog: [Tech People Architecture](#)