



ICAO

SAFETY
REPORT

Universal Safety Oversight Audit Programme

Continuous Monitoring Approach Results

1 January 2013 to 31 December 2015



FOREWORD

The Universal Safety Oversight Audit Programme (USOAP) is one of ICAO's priority programmes and certainly one of the most visible that ICAO has launched in the last two decades. The "Eight Critical Elements (CEs)" are now a common language in the aviation community and their "Effective Implementation (EI)" a common metric used when referring to States' safety oversight systems.

In January 2013, after 15 years of auditing States, the USOAP transitioned to the Continuous Monitoring Approach (CMA), evolving towards an information-driven, risk-based and result-oriented programme. The ambitious objectives of the CMA include: monitoring States' safety oversight systems using a web-based platform — the "Online Framework" (OLF); validating States' progress through various on-site and off-site activities; and continuing to assess the effectiveness and sustainability of States' safety oversight systems through audits.

In the course of finding the most effective ways to achieve its objectives, taking into account the human and financial resources available, the USOAP CMA has also matured and improved. The CMA process permits a more accurate reflection of real-time changes as they occur around the globe. The programme also enjoys new flexibility to address changing circumstances (with introduction of activities of limited scope). The resulting prioritization and focus have yielded improved cost-effectiveness as well. This evolution will continue in

the next few years, in order to support State's efforts in implementing a State Safety Programme (SSP).

This report, which presents information on the activities and results of the USOAP CMA from January 2013 to December 2015, not only provides statistical data, but also highlights a number of challenges which States continue to face. Such challenges will call for increased efforts at national, regional and global levels.

Without any doubt, over the years, the USOAP CMA has contributed to enhancing aviation safety worldwide. This would not have been possible without the active cooperation and engagement of States. We are committed to continue supporting the enhancement of States' safety oversight systems and monitoring their effectiveness and sustainability.



Stephen Patrick Creamer
Director
Air Navigation Bureau

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All maps rendered in this document are notional, may not reflect actual boundaries agreed by the United Nations and should not be used for navigational purposes.

Table of contents

	Page
FOREWORD.....	3
Chapter 1.	
INTRODUCTION.....	6
1.1 SUMMARY.....	8
1.2 BACKGROUND.....	6
Chapter 2.	
THE ICAO USOAP CMA.....	8
2.1 CRITICAL ELEMENTS.....	8
2.2 AUDIT AREAS.....	9
2.3 USOAP CMA PROTOCOL QUESTIONS.....	11
2.4 EFFECTIVE IMPLEMENTATION.....	11
2.5 COMPLIANCE CHECKLISTS/ELECTRONIC FILING OF DIFFERENCES (EFOD) SYSTEM.....	11
Chapter 3.	
USOAP CMA RESULTS.....	12
3.1 GLOBAL EI AND GEOGRAPHIC DISTRIBUTION OF ACTIVITIES.....	12
3.2 GLOBAL RESULTS BY CRITICAL ELEMENT.....	16
3.3 GLOBAL RESULTS BY AUDIT AREA.....	17
3.4 REGIONAL RESULTS BY CRITICAL ELEMENT.....	18
3.5 REGIONAL RESULTS BY AUDIT AREA.....	21
Chapter 4.	
HIGHLIGHTS OF ISSUES IDENTIFIED IN THE EIGHT AUDIT AREAS.....	24
4.1 HIGHLIGHTS OF ISSUES IDENTIFIED IN THE LEG AREA.....	24
4.2 HIGHLIGHTS OF ISSUES IDENTIFIED IN THE ORG AREA.....	26
4.3 HIGHLIGHTS OF ISSUES IDENTIFIED IN THE PEL AREA.....	27
4.4 HIGHLIGHTS OF ISSUES IDENTIFIED IN THE OPS AREA.....	28
4.5 HIGHLIGHTS OF ISSUES IDENTIFIED IN THE AIR AREA.....	29
4.6 HIGHLIGHTS OF ISSUES IDENTIFIED IN THE AIG AREA.....	30
4.7 HIGHLIGHTS OF ISSUES IDENTIFIED IN THE ANS AREA.....	33
4.8 HIGHLIGHTS OF ISSUES IDENTIFIED IN THE AGA AREA.....	34
Chapter 5.	
COMPLIANCE CHECKLISTS.....	36
5.1 PROGRESS OF STATES IN COMPLETION OF COMPLIANCE CHECKLISTS.....	36
5.2 LEVEL OF COMPLIANCE TO SARPS REPORTED BY STATES.....	36
Appendix A. DEFINITIONS AND TERMINOLOGY.....	65
Appendix B. STATISTICAL DATA FOR SUBGROUPS OF EACH AUDIT AREA.....	69
Appendix C. CONDUCTED USOAP CMA ACTIVITIES.....	75

Chapter 1

INTRODUCTION

1.1 SUMMARY

1.1.1 This report provides results and analysis of data from activities conducted within the Universal Safety Oversight Audit Programme Continuous Monitoring Approach (USOAP CMA). The data and safety information collected from Member States and other stakeholders through the USOAP CMA allow ICAO to use a risk-based approach for monitoring and assessing States' safety oversight capabilities through various on-site and off-site monitoring activities.

1.1.2 Reporting of USOAP CMA results also supports the objectives of the Global Aviation Safety Plan (GASP) 2014-2016, particularly implementation of an effective safety oversight system (near-term objective) and the progress towards full implementation of the State safety programme (SSP) (mid-term objective). The availability of USOAP CMA results in a transparent and relevant manner allows States to focus on areas of their safety oversight systems that need improvement.

1.1.3 This report includes information and results from USOAP CMA activities conducted over a three-year period since the launch of the CMA on 1 January 2013 until 31 December 2015.

1.2 BACKGROUND

1.2.1 The 37th session of the Assembly (September – October 2010) adopted Resolution A37-5 regarding the evolution of USOAP to the CMA as a mechanism for ICAO to monitor the safety oversight capabilities of Member States on a continuous basis. The CMA was officially launched in January 2013, after a two-year transition in 2011-2012. Under USOAP CMA, ICAO conducts various activities, including mainly audits, ICVMs and off-site validation activities.

1.2.2 A USOAP CMA audit is an on-site activity during which ICAO determines a State's capability for safety oversight by assessing the State's effective implementation of the critical elements (CEs) of a safety oversight system (see Chapter 2, 2.1).

1.2.3 An ICVM is an on-site activity during which an ICAO team of subject matter experts collects and assesses evidence provided by the State demonstrating that the State has implemented corrective actions (or mitigating measures for significant safety concerns (SSCs)) to address previously identified findings. ICAO validates the collected evidence and information.

1.2.4 During an off-site validation activity, an ICAO team of subject matter experts assesses corrective actions implemented by a State to address certain findings without an on-site visit to the State. ICAO validates submitted supporting evidence at ICAO Headquarters. This type of activity is limited to eligible protocol questions (PQs) that do not require on-site verification, i.e. mainly those related to the establishment of legislation, regulations, policies and procedures.

Note.— Further details about USOAP CMA activities are described in Doc 9735 — Universal Safety Oversight Audit Programme Continuous Monitoring Manual.

1.2.5 This report uses data from the USOAP CMA online framework (<http://icao.int/usoap/>). The online framework is the main tool for collecting, continuous monitoring and reporting of USOAP CMA data. It provides ICAO, Member States and other authorized users with a suite of web-integrated applications that allow access to safety-related information and documentation received during USOAP CMA activities from Member States and international organizations that have an agreement with ICAO for sharing of safety information under the USOAP CMA. This report also uses various analyses of USOAP CMA data generated by ICAO's Integrated Safety Trend Analysis and Reporting System (iSTARS/SPACE at <http://portal.icao.int> – group name SPACE) platform.

Chapter 2

THE ICAO USOAP CMA

2.1 CRITICAL ELEMENTS

2.1.1 Critical elements (CEs) are essentially the defence tools of a State's safety oversight system required for the effective implementation of safety-related standards, policy and associated procedures. Each Member State should address all CEs in its effort to establish and implement an effective safety oversight system that reflects the shared responsibility of the State and the aviation community. CEs of a safety oversight system cover the whole spectrum of civil aviation activities, including personnel licensing, aircraft operations, airworthiness of aircraft, aircraft accident and incident investigation, air navigation services and aerodromes, as applicable. The level of effective implementation of the CEs is an indication of a State's capability for safety oversight.

2.1.2 The CEs of a State's safety oversight system, as outlined in Annex 19 — Safety Management, Appendix 1, are as follows:

CE-1 Primary aviation legislation

1.1 The State shall promulgate a comprehensive and effective aviation law, consistent with the size and complexity of the State's aviation activity and with the requirements contained in the Convention on International Civil Aviation, that enables the State to regulate civil aviation and enforce regulations through the relevant authorities or agencies established for that purpose.

1.2 The aviation law shall provide personnel performing safety oversight functions access to the aircraft, operations, facilities, personnel and associated records, as applicable, of service providers.

CE-2 Specific operating regulations

The State shall promulgate regulations to address, at a minimum, national requirements emanating from the primary aviation legislation, for standardized operational

procedures, products, services, equipment and infrastructures in conformity with the Annexes to the Convention on International Civil Aviation.

Note.— The term “regulations” is used in a generic sense and includes but is not limited to instructions, rules, edicts, directives, sets of laws, requirements, policies and orders.

CE-3 State system and functions

3.1 The State shall establish relevant authorities or agencies, as appropriate, supported by sufficient and qualified personnel and provided with adequate financial resources. Each State authority or agency shall have stated safety functions and objectives to fulfil its safety management responsibilities.

3.2 **Recommendation.**— *The State should take necessary measures, such as remuneration and conditions of service, to ensure that qualified personnel performing safety oversight functions are recruited and retained.*

3.3 The State shall ensure that personnel performing safety oversight functions are provided with guidance that addresses ethics, personal conduct and the avoidance of actual or perceived conflicts of interest in the performance of official duties.

3.4 **Recommendation.**— *The State should use a methodology to determine its staffing requirements for personnel performing safety oversight functions, taking into account the size and complexity of the aviation activities in that State.*

Note.— In addition, Appendix 5 to Annex 6, Part I, and Appendix 1 to Annex 6, Part III, require the State of the Operator to use such a methodology to determine its inspector staffing requirements. Inspectors are a subset of personnel performing safety oversight functions.

CE-4 Qualified technical personnel

4.1 The State shall establish minimum qualification requirements for the technical personnel performing safety oversight functions and provide for appropriate initial and recurrent training to maintain and enhance their competence at the desired level.

4.2 The State shall implement a system for the maintenance of training records.

CE-5 Technical guidance, tools and provision of safety-critical information

5.1 The State shall provide appropriate facilities, comprehensive and up-to-date technical guidance material and procedures, safety-critical information, tools and equipment, and transportation means, as applicable, to the technical personnel to enable them to perform their safety oversight functions effectively and in accordance with established procedures in a standardized manner.

5.2 The State shall provide technical guidance to the aviation industry on the implementation of relevant regulations.

CE-6 Licensing, certification, authorization and/or approval obligations

The State shall implement documented processes and procedures to ensure that personnel and organizations performing an aviation activity meet the established

requirements before they are allowed to exercise the privileges of a licence, certificate, authorization and/or approval to conduct the relevant aviation activity.

CE-7 Surveillance obligations

The State shall implement documented surveillance processes, by defining and planning inspections, audits, and monitoring activities on a continuous basis, to proactively assure that aviation licence, certificate, authorization and/or approval holders continue to meet the established requirements. This includes the surveillance of personnel designated by the Authority to perform safety oversight functions on its behalf.

CE-8 Resolution of safety issues

8.1 The State shall use a documented process to take appropriate corrective actions, up to and including enforcement measures, to resolve identified safety issues.

8.2 The State shall ensure that identified safety issues are resolved in a timely manner through a system which monitors and records progress, including actions taken by service providers in resolving such issues.

2.2 AUDIT AREAS

The following eight audit areas have been identified in the USOAP:

- 1) primary aviation legislation and civil aviation regulations (LEG);
- 2) civil aviation organization (ORG);
- 3) personnel licensing and training (PEL);
- 4) aircraft operations (OPS);
- 5) airworthiness of aircraft (AIR);
- 6) aircraft accident and incident investigation (AIG);
- 7) air navigation services (ANS); and
- 8) aerodromes and ground aids (AGA).

2.3 USOAP CMA PROTOCOL QUESTIONS

2.3.1 Protocol questions (PQs) are the primary tool for assessing the level of effective implementation of a State's safety oversight system. They are based on the Chicago Convention, safety-related Standards and Recommended Practices (SARPs) established in the Annexes to the Convention, Procedures for Air Navigation Services (PANS), ICAO documents and other guidance material. Each PQ contributes to assessing the effective implementation of one of the eight CEs in one of the eight audit areas.

2.3.2 The use of standardized PQs ensures transparency, quality, consistency, reliability and fairness in the conduct and implementation of USOAP CMA activities.

2.3.3 Any change in the status of a PQ for a State will lead to an update of the effective implementation (EI) of the EI.

2.3.4 During a USOAP CMA activity, if there is insufficient or no documented evidence to prove that a PQ is satisfactory, a shortcoming is identified and documented through the issuance of a PQ finding. Generating a finding changes the status of the associated PQ to "not satisfactory" and decreases the State's EI. Each PQ finding must be based on one PQ.

2.3.5 In order for ICAO to close a PQ finding, the State must address the associated PQ by resolving all the shortcomings detailed in the finding.

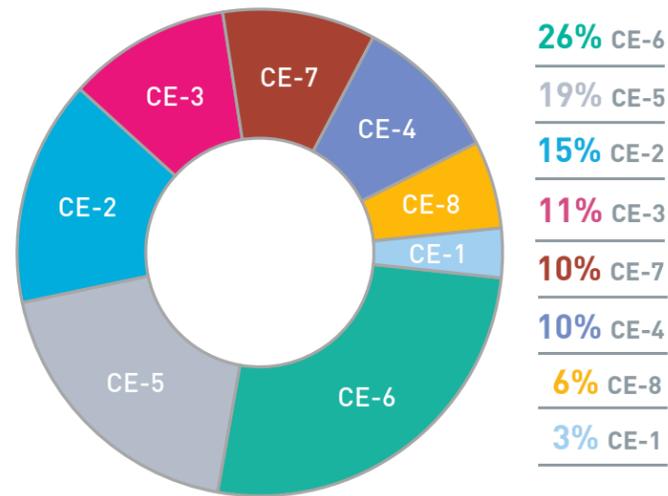


Figure 2-1a. Proportion of USOAP CMA PQs by CE

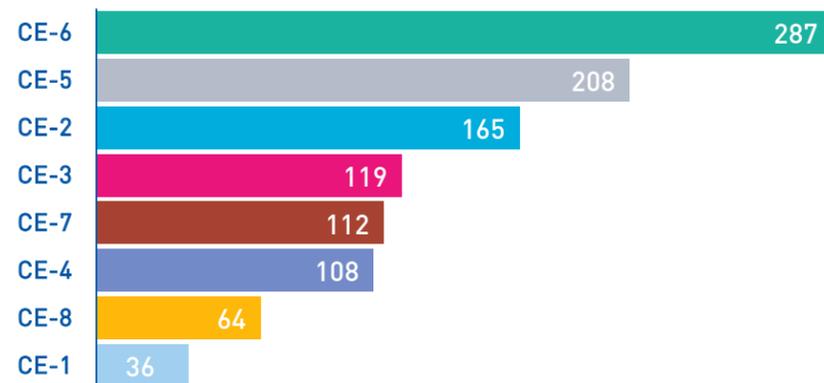


Figure 2-1b. Number of USOAP CMA PQs by CE

2.4 EFFECTIVE IMPLEMENTATION

2.4.1 Effective implementation (EI) is a measure of the State's safety oversight capability. A higher EI indicates a higher maturity of the State's safety oversight system.

2.4.2 The EI is calculated for any group of applicable PQs based on the following formulae:

$$EI (\%) = \frac{\text{number of satisfactory PQs}}{\text{total number of applicable PQs}} \times 100$$

The EI can thus be calculated for each CE, each audit area and as an overall value.

In addition to the EI, a lack of effective implementation (LEI) score is also calculated for certain analysis. The LEI is simply calculated as:

$$LEI (\%) = 100 - EI (\%)$$

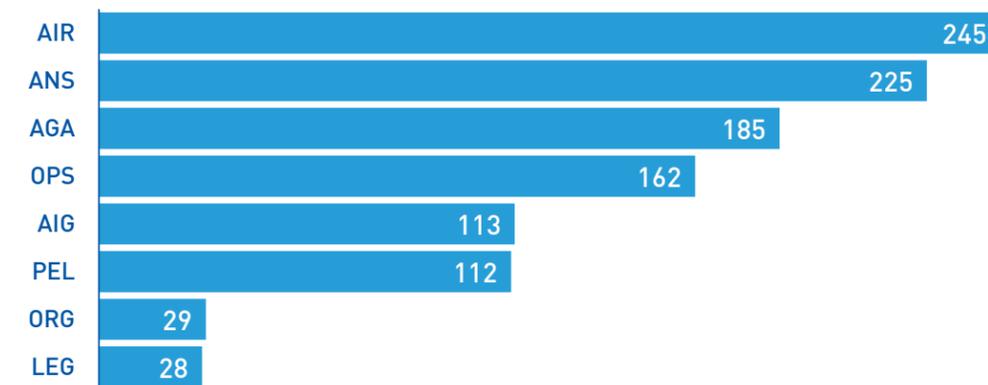
2.5 COMPLIANCE CHECKLISTS/ELECTRONIC FILING OF DIFFERENCES (EFOD) SYSTEM

2.5.1 States are required by the USOAP CMA Memorandum of Understanding to complete and maintain up to date the compliance checklists (CCs) for 18 of the 19 Annexes to the Chicago Convention (i.e. all Annexes except Annex 17). These contain information regarding the implementation of the specific SARPs of the corresponding Annexes to the Chicago Convention. The completion of the CCs by Member States provides information regarding their level of compliance to the ICAO SARPs as well as any deviation categorized in one of the following three groups:

- a) More exacting or exceeds;
- b) Difference in character or Other means of compliance; and
- c) Less protective or partially implemented or not implemented.

2.5.2 States must provide this information through the CC/EFOD module of the CMA online framework (OLF). States can use the "Validate" function of the module to convert their entries into filed differences, as per the requirements of Article 38 of the Chicago Convention. Details of each State's CC reporting could be viewed in the report produced from the CC/EFOD Reports module of the USOAP CMA OLF.

Figure 2-2. Number of PQs by audit area



Chapter 3

USOAP CMA RESULTS

3.1 GLOBAL EI AND GEOGRAPHIC DISTRIBUTION OF ACTIVITIES

USOAP CMA on-site activities — audits and ICVMs — are scheduled on a yearly basis taking into consideration safety risk factors as well as the need for an appropriate geographical distribution. The yearly schedule is published by ICAO via Electronic Bulletin. The scheduling of additional activities (mainly additional ICVMs and off-site validation activities) depends on additional conditions and factors, including specific requests which may be made by States and agreed upon by ICAO, provided that sufficient progress has been achieved and documented by the State on the OLF, and that the necessary resources are available to perform the activities.

Figure 3-1. Number of States in each ICAO region, number of USOAP CMA activities conducted in each region and number of States that received one or more activities for the reporting period

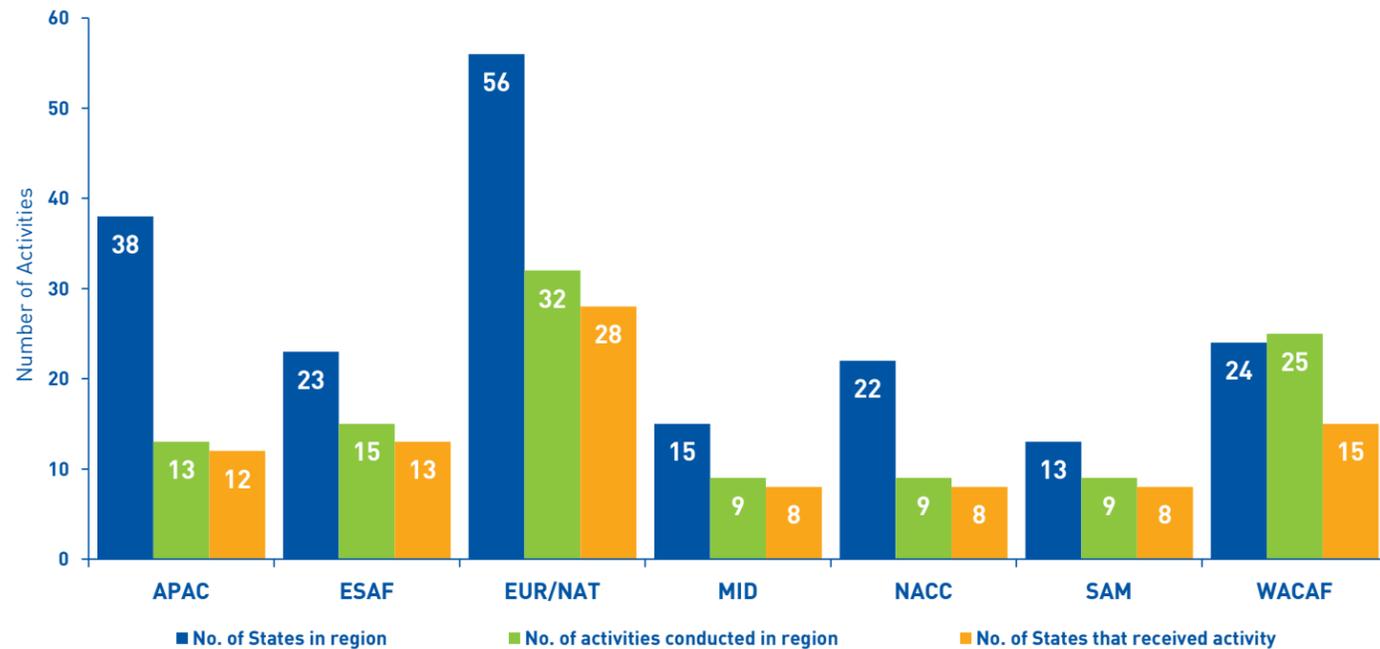
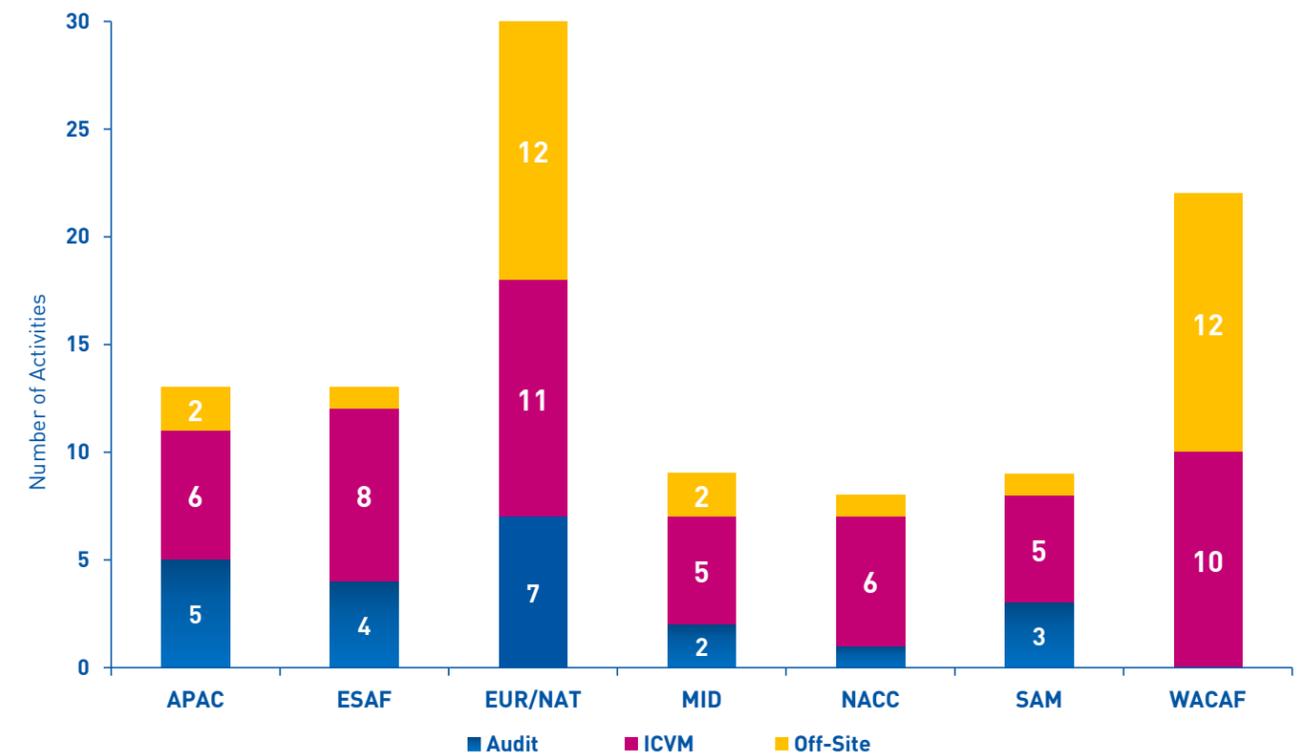


Figure 3-2. Number of audits, ICVMs and off-site validation activities conducted in each ICAO region for the reporting period



In practice, a number of States in each ICAO region have received more than one activity in this reporting period, as shown in Figure 3-3. As a result of the USOAP CMA activities conducted during the reporting period (including CMA audits, ICVMs and off-site validation activities), the global average EI went up from 61.64 per cent to 63.22 per cent.

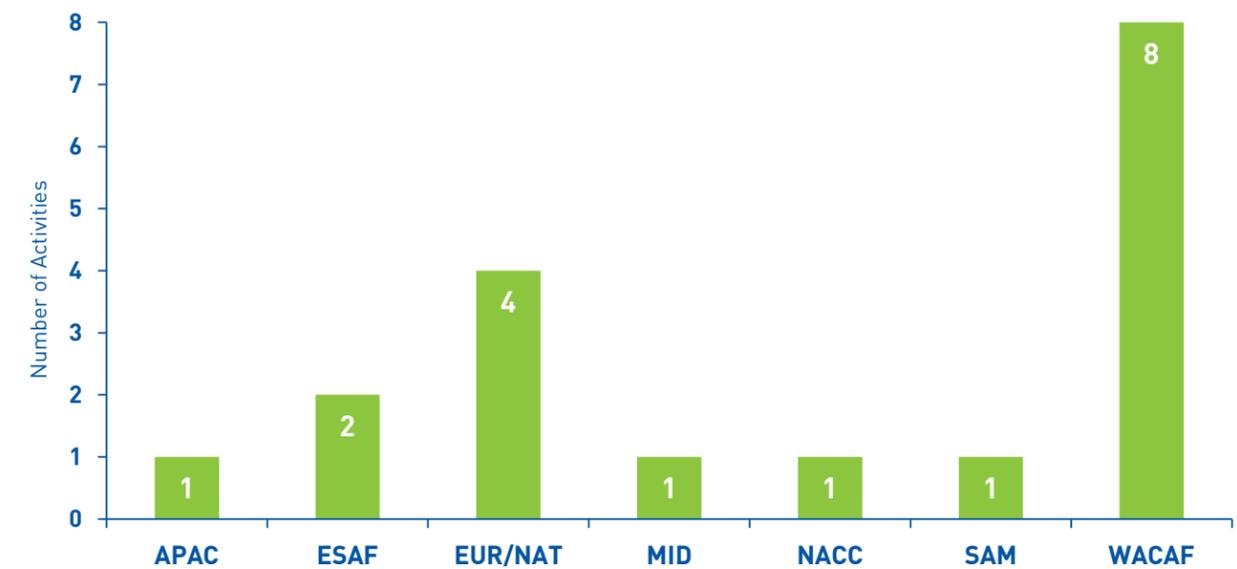


Figure 3-3. Number of States in each ICAO region that received more than one USOAP CMA activity for the reporting period

Figures 3-1 to 3-3. Reporting period from 1 January 2013 to 31 December 2015

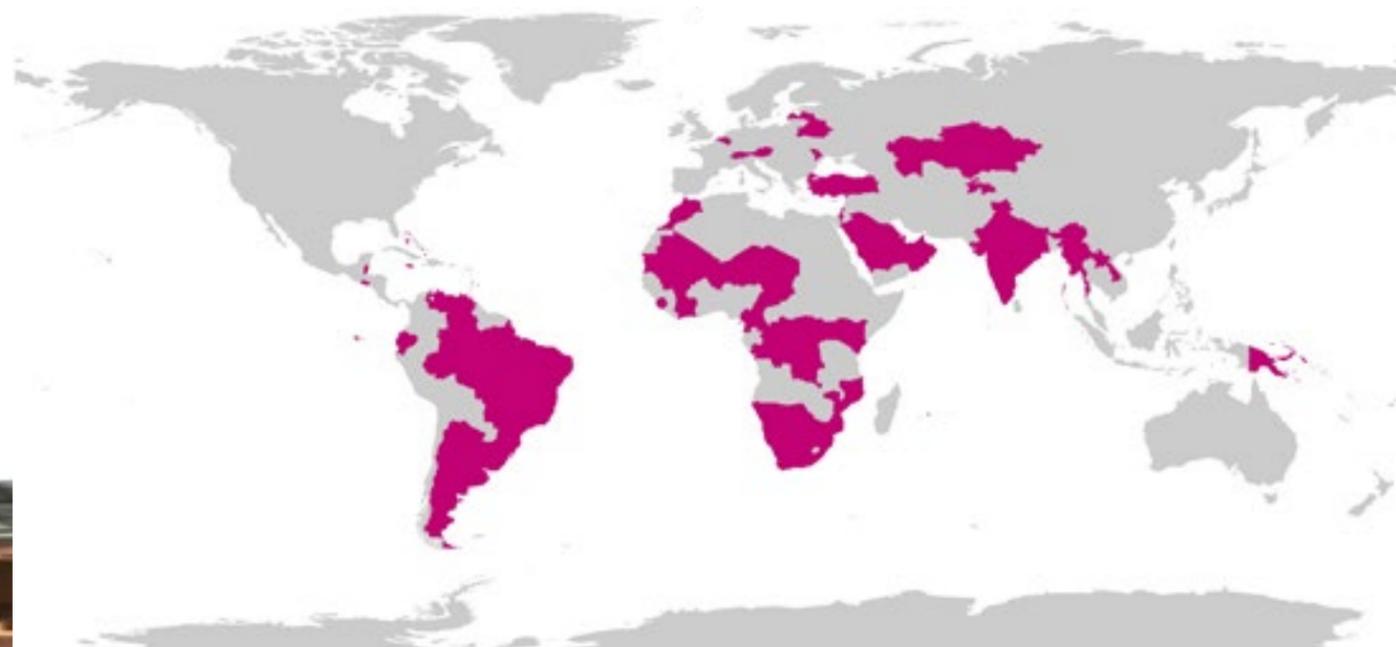
Audits— Conducted USOAP CMA Activities from 1 January 2013 to 31 December 2015



Off-site Validation Activities — Conducted USOAP CMA Activities from 1 January 2013 to 31 December 2015



ICAO Coordinated Validation Missions (ICVMs) — Conducted USOAP CMA Activities from 1 January 2013 to 31 December 2015



3.2 GLOBAL RESULTS BY CRITICAL ELEMENT

3.2.1 As of end 2015, CE-4 remains the CE with the lowest EI rate at global level, and CE-1 remains the CE with the highest EI rate. In the three-year reporting period, all CEs from CE-1 to CE-5 have seen an increase of their EI. However, all CEs related to the actual implementation of the State's safety oversight system, i.e. CE-6, CE-7 and CE-8, have seen a decrease of their EI.

3.2.2 The EI decrease results from a number of factors. One of them is the fact that a deterioration of the safety oversight system was observed in some States, where the system established showed not to be sufficiently sustainable. This was the case in particular when the State had not been able to retain some of its qualified and experienced technical staff. Some other States had gone through periods of instability, which had impacted the system established within the CAA. Finally, some States had seen a significant increase of their level of aviation activity, with the CAA not being sufficiently staffed to effectively perform all necessary additional certification, surveillance and enforcement activities.

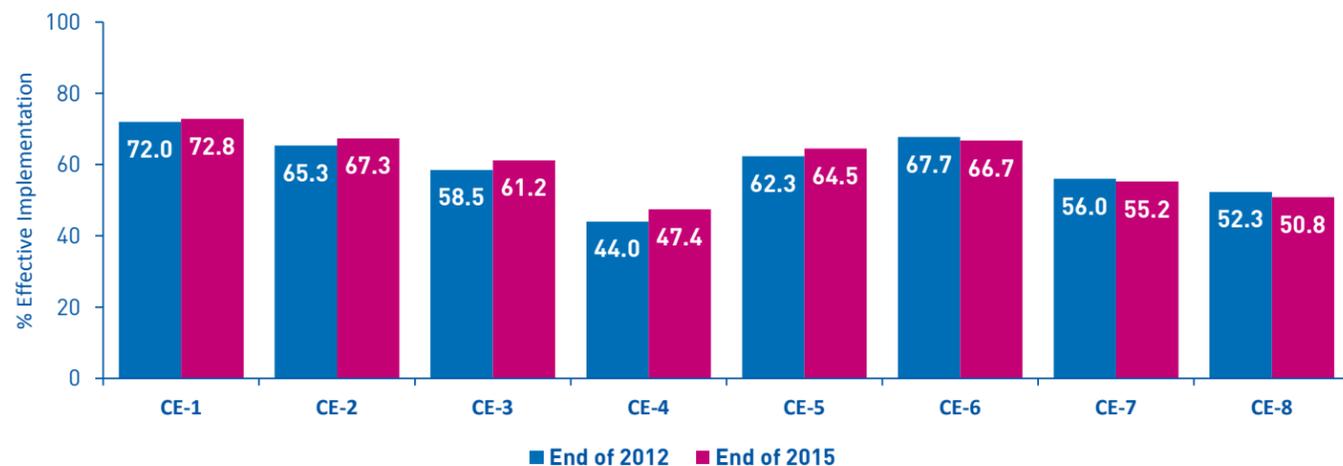
3.2.3 Another factor which contributed to the EI decrease in the CE-6, CE-7 and CE-8 is the fact that some States had not been able to ensure the implementation of new or amended SARPs by their service providers, which normally require not only amendments to the regulations but also additional evaluations during initial approval and continuous surveillance activities.

3.2.4 The CEs which have had the highest increase in the three-3 year reporting period are CE-4 and CE-5. During this period, ICAO has been able to validate (during on-site as well as off-site activities) the establishment of training-related documentation, such as training policy and programmes, as well as the establishment of procedures by States. These are typically the “low hanging fruits” which — unlike the amendment of regulations or legislation — do not normally require lengthy drafting, consultation and promulgation processes.

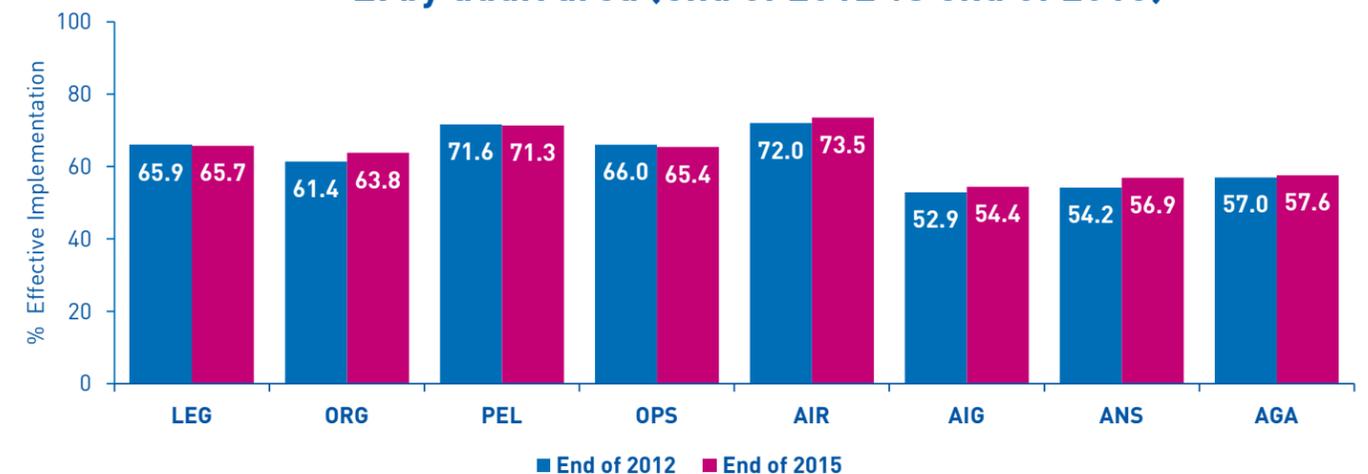
3.3 GLOBAL RESULTS BY AUDIT AREA

As of end 2015, at global level, the three audit areas with the lowest EI are AIG, ANS and AGA, partly due to the fact that ICAO only started to perform USOAP audit activities in these areas in 2005 (as opposed to 1999 for the PEL, OPS and AIR areas). AIR remains the area with the highest EI rate and AIG the one with the lowest EI rate. Indeed, USOAP CMA activities have identified that many States still lack adequate legislation, regulations and procedures related to investigations, and also sufficient human and financial resources to discharge their obligations called for in Annex 13 to the Chicago Convention. In the three-year reporting period, within the six technical audit areas (PEL, OPS, AIR, AIG, ANS and AGA), all areas saw an increase of the EI at global level with the exception of PEL and OPS, which saw a slight decrease. The highest increase of EI was in the ANS area.

EI by CE (end of 2012 vs end of 2015)

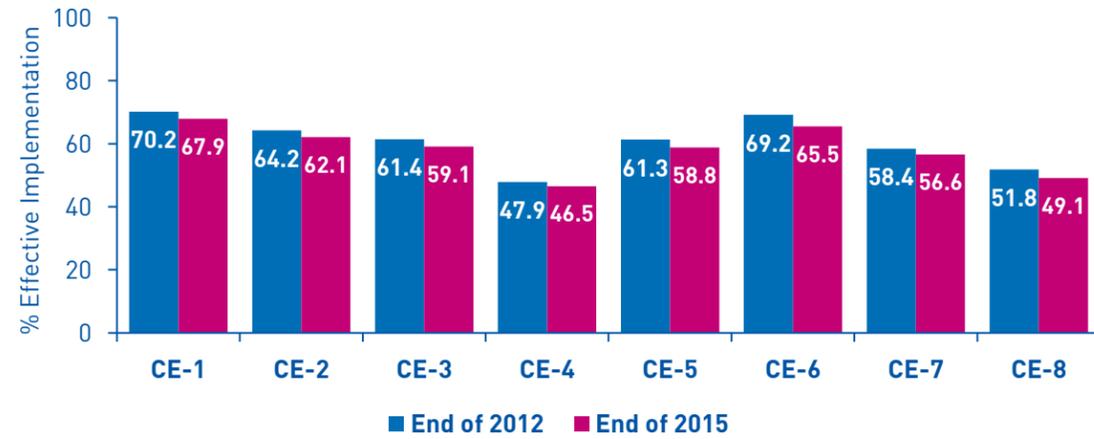


EI by audit area (end of 2012 vs end of 2015)

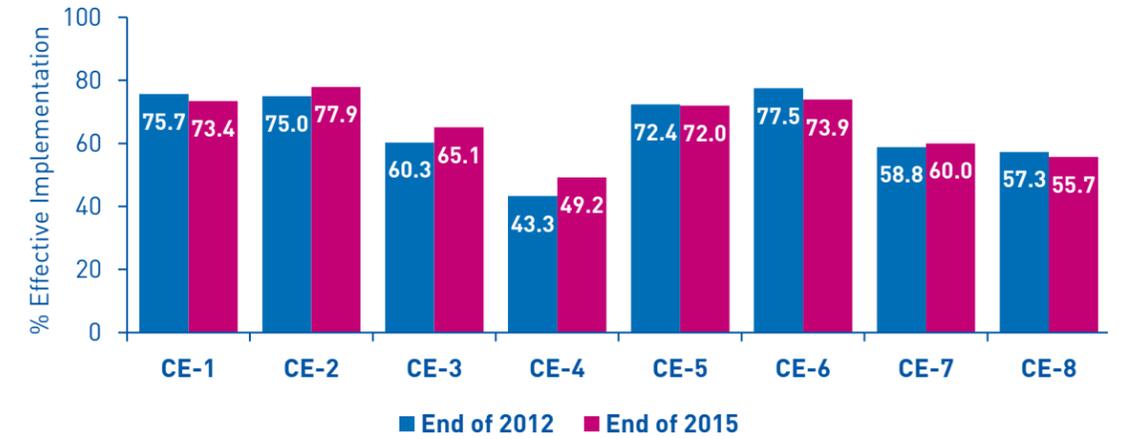


3.4 REGIONAL RESULTS BY CRITICAL ELEMENT

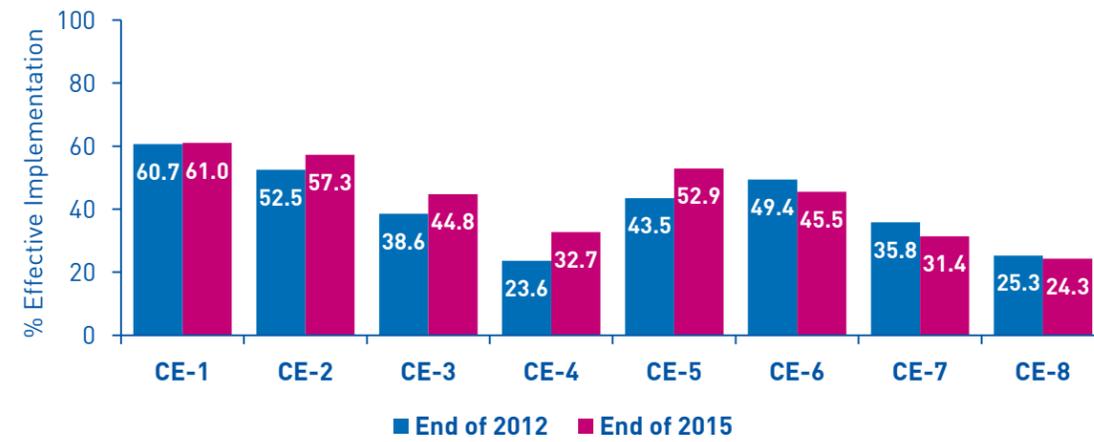
APAC — CE



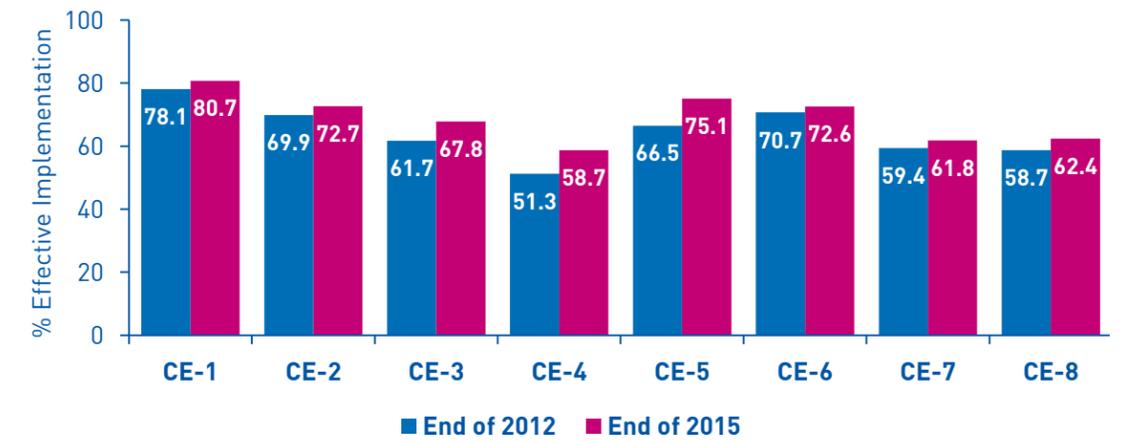
MID — CE



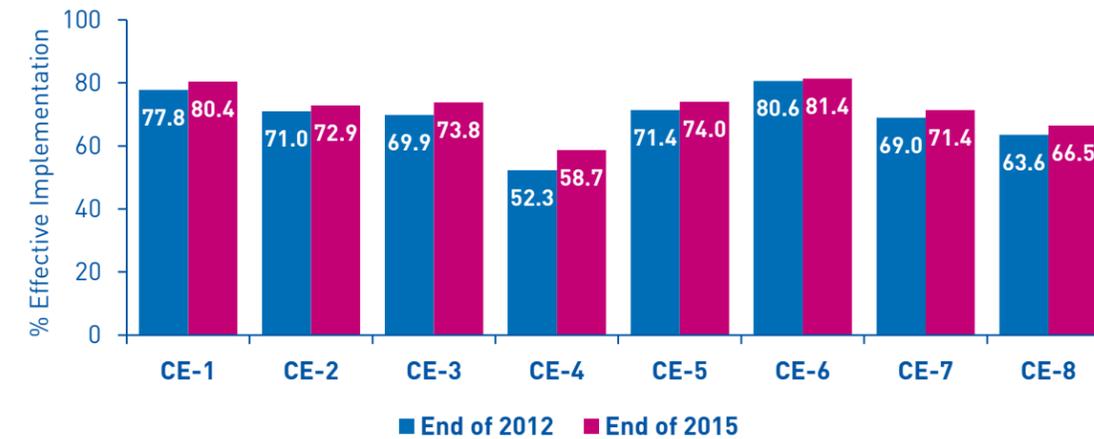
ESAF — CE



NACC — CE

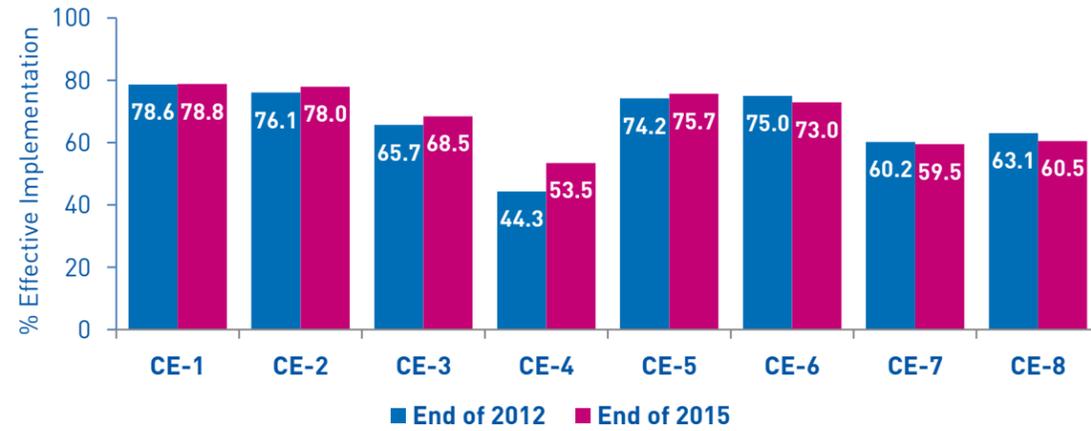


EUR/NAT — CE

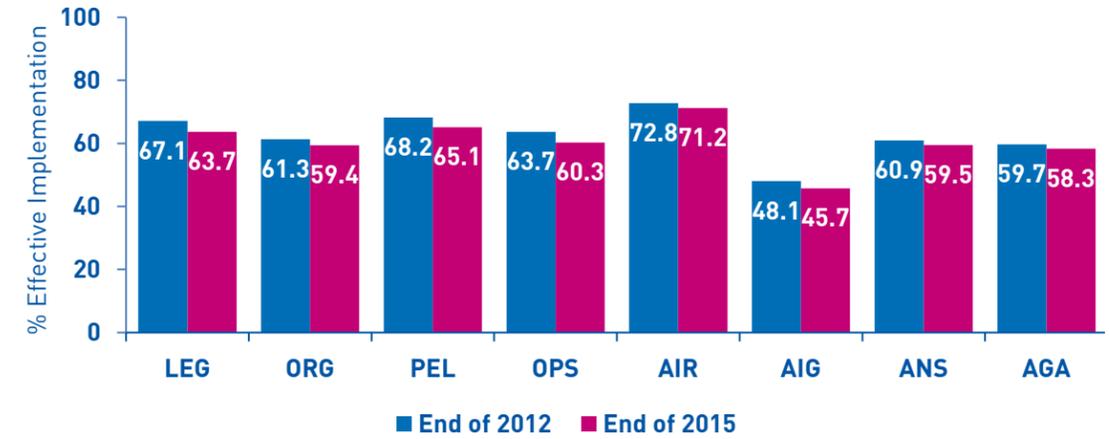


3.5 REGIONAL RESULTS BY AUDIT AREA

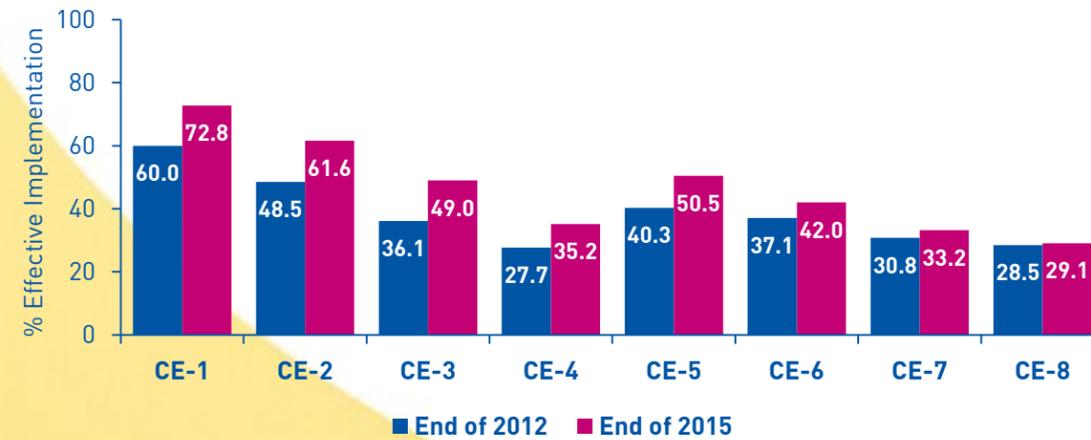
SAM — CE



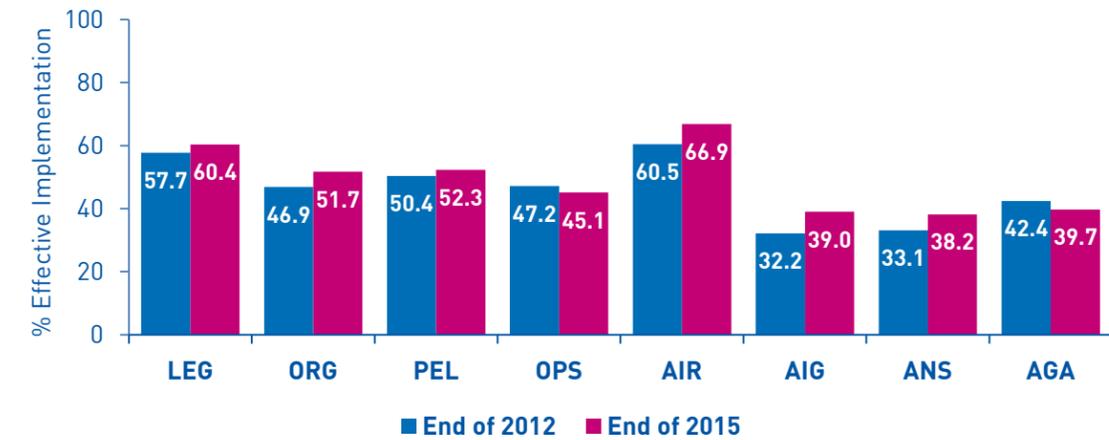
APAC — Audit area



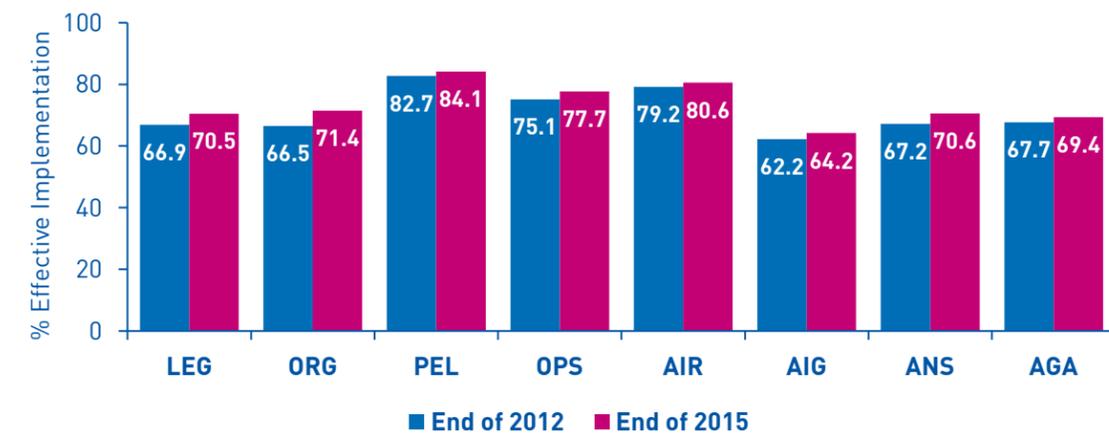
WACAF — CE



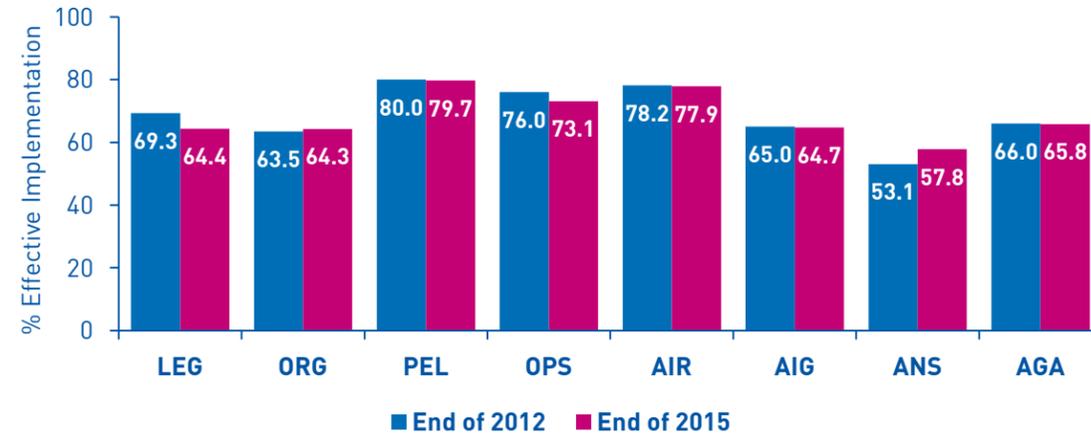
ESAF — Audit area



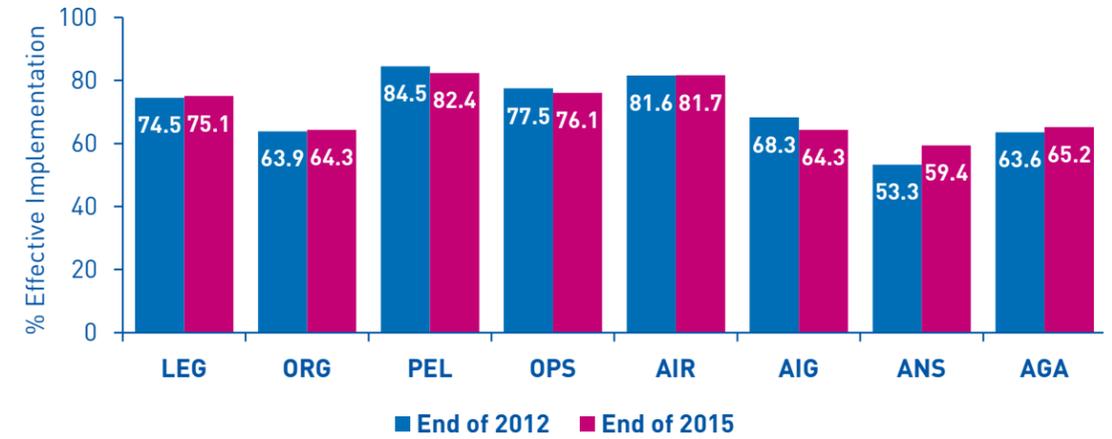
EUR/NAT — Audit area



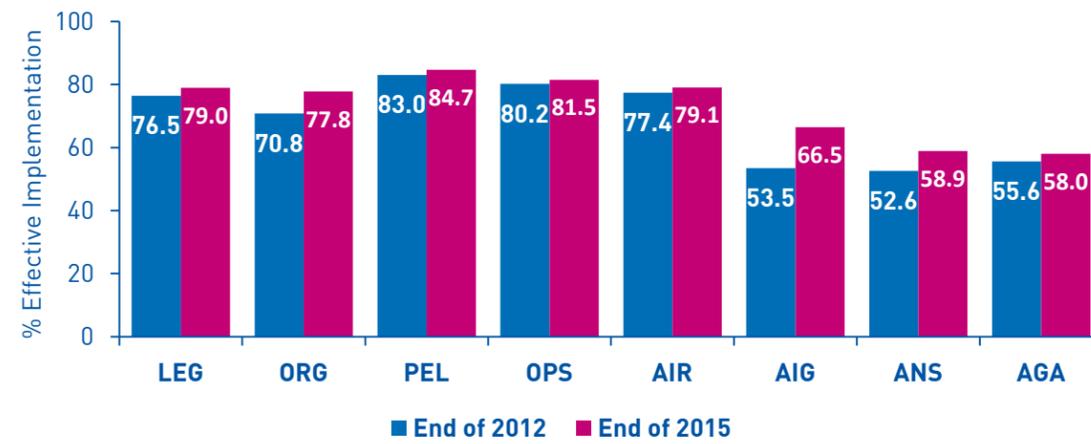
MID — Audit area



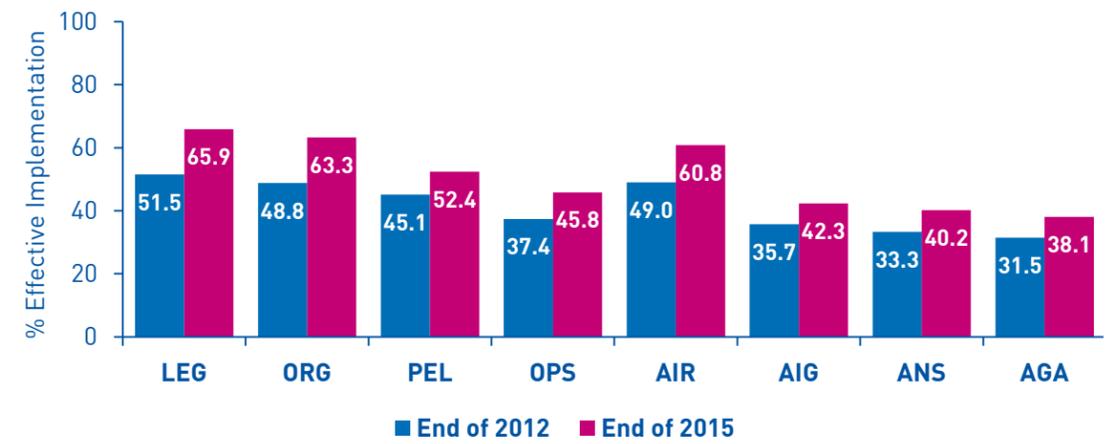
SAM — Audit area



NACC — Audit area



WACAF — Audit area



Chapter 4

HIGHLIGHTS OF ISSUES IDENTIFIED IN THE EIGHT AUDIT AREAS

This chapter outlines a number of aspects related to safety oversight and accident/incident investigation, for which USOAP CMA activities have identified that most States continue to face challenges. Based on the information collected through USOAP CMA activities, this chapter does not however intend to present in a detailed or exhaustive manner all the main deficiencies identified through the USOAP CMA. The information contained therein does not address operational safety issues in the various areas, but rather issues related to the State's safety oversight systems and the State's systems for the independent investigation of aircraft accident and serious incidents and for occurrence reporting and analysis. In addition to the highlights of issues identified in the eight audit areas, Appendix B to this report presents Effective Implementation (EI) rates for each subgroup in the eight audit areas.

4.1 HIGHLIGHTS OF ISSUES IDENTIFIED IN THE LEG AREA

4.1.1 Developing and maintaining a comprehensive and up-to-date set of regulations

4.1.1.1 More than 70 per cent of the States have not established comprehensive procedures for the timely amendment of their civil aviation regulations in order to keep pace with amendments to the Annexes to the Chicago Convention. When established, these procedures sometimes lack the necessary level of detail and customization regarding the processing of ICAO State Letters, the coordination with all relevant entities within or outside of the State's CAA, as applicable, and the inclusion of realistic but effective timelines for each step of the process (starting from the identification of the need for amendments of the regulations to the actual promulgation and publication of amended or new regulations).

4.1.1.2 The lack of timely amendment of the national regulations, due in part to the lack of comprehensive procedures but also to limitations in the availability of qualified human resources, results in incomplete — and sometimes poor — regulatory frameworks, which, in turn, impact the capability of States to license, certify, authorize or approve, as applicable, organizations and individuals under their oversight authority in conformance with all relevant ICAO SARPs, including the most recent ones. Even in the case of States which have adapted or adopted regulations from other States or regional organizations, or “model regulations”, the maintenance of the State's regulations in order to keep pace with the ICAO amendments is still necessary.

4.1.2 Identifying differences with SARPs, notifying them to ICAO and publishing significant differences in the Aeronautical Information Publication (AIP)

4.1.2.1 More than 75 per cent of the States have not established an effective system for the identification and notification of the differences between the SARPs and their national regulations and practices to ICAO. In addition, more than 80 per cent have not published their significant differences in their AIP, as required by Annex 15. For those States which have established procedures for the notification of differences, these procedures often lack detail about the stakeholders which need to be involved (technical and/or legal experts within or outside of the State's CAA) and the necessary and timely coordination between them. The implementation of the established procedures is not only impacted by their level of detail and clarity, but also by the limited qualified human resources available to States. The identification of differences requires sufficient understanding of the SARPs involved, which may be limited by the actual qualification and training of the State's personnel, by the complexity or formulation of some SARPs and by the inherent difficulty associated with the assessment of the level of compliance of national regulations and practices with SARPs.

4.1.3 Establishing and implementing policies and procedures for issuing exemptions

4.1.3.1 In more than 50 per cent of the States, the primary aviation legislation does not provide a legal basis for the issuance of exemptions in the various aviation domains, as applicable. The initial certification and continuous surveillance processes include the scrutiny and approval of exemptions, where the option of not conforming with one or more of the established requirements is requested by a service provider or rendered necessary under specific circumstances, and should be approved by the CAA. Such exemptions are normally based on aeronautical studies and/or risk assessments, which should be formal and thoroughly conducted or reviewed by appropriate CAA qualified inspectors.

4.1.3.2 In addition, the State should issue a formal policy stating the circumstances and rationale under which aeronautical studies and/or risk assessments may be conducted to support requests for exemptions, and the level at which exemptions may be approved. In many States, non-compliances with established requirements are not documented and are not duly processed through a risk assessment mechanism. In some cases, the identification of non-compliances during the certification process is rendered difficult by the absence of comprehensive regulatory requirements.

4.1.4 Establishing and implementing enforcement policies and procedures

4.1.4.1 In more than 40 per cent of the States, the established legal framework, based on the applicable legislation, regulations and procedures, does not enable an effective enforcement of the applicable primary aviation legislation and specific operating regulations. This is the case in the areas of air navigation services (ANS) and aerodromes and ground aids (AGA), where potential or perceived conflict of interest may exist, if the State is involved in the provision of such services. It is important that the established legal framework provide clear enforcement powers to the State's CAA and include, *inter alia*, effective penalties to serve as a deterrent.

4.1.4.2 The establishment of adequate enforcement policies and procedures requires the cooperation of all stakeholders within the CAA, including the legal department and the various inspectorates. These policies and procedures should provide for responses to non-compliances or violations, which are appropriate, consistent and commensurate with the issues identified. While ICAO requires States to review their enforcement policies and procedures to allow service providers to deal with and resolve events involving certain safety deviations within the context of their accepted safety management system (SMS) as well as the conditions and circumstances under which the established enforcement procedures apply, many States are still challenged by the establishment of basic enforcement policies and procedures.

4.2 HIGHLIGHTS OF ISSUES IDENTIFIED IN THE ORG AREA

4.2.1 Recruiting and retaining sufficient qualified technical staff for the State authorities

4.2.1.1 More than 75 per cent of the States do not have a system in place that enables their authorities — CAA and accident investigation authority (when a permanent investigation authority is established) — to recruit and retain sufficient qualified technical personnel. Most of the States' CAAs have employment conditions which do not make them sufficiently competitive vis-à-vis the civil aviation industry in the State, in particular for the recruitment of active airline pilots and air traffic controllers. This equally applies to the accident investigation authorities in many cases.

4.2.1.2 While some States manage to recruit adequately qualified experts, they may not be able to retain them. Once these experts receive significant training and accumulate experience, they are offered positions in the industry, in other States or in international or regional organizations which have more attractive employment conditions or compensation packages. The lack of or insufficient number of qualified inspectors remains the main obstacle to the implementation of an effective State safety oversight system, and is often the root cause of situations leading to the identification of Significant Safety Concerns (SSC) in the State by ICAO.

4.2.1.3 Given some States' constraints and limitations, the establishment and participation in a regional safety oversight organization (RSOO) may be considered as an effective option, provided that the conditions are gathered for such RSOO to be established and maintained. Another difficulty for some States is to objectively estimate the CAA's staffing needs in the various aviation domains, based on the State's level of activity and complexity of the aviation system, as well as to estimate and obtain additional human resources when a significant increase in the State's level of aviation activity is observed or forecasted.

4.2.2 Providing sufficient training to the technical staff of the CAA

4.2.2.1 More than 35 per cent of the States have not established a training policy for the technical personnel of the CAA. The training policy should be issued at the appropriate level and should contain a commitment to deliver all necessary training to the technical staff (inspectors) of the CAA. Ideally, it should require the establishment of comprehensive and detailed training programmes for all technical personnel positions within the CAA (addressing initial, on-the-job (OJT), recurrent and advanced/specialized training) and the establishment of periodic training plans for each technical staff member. The policy may also contemplate the establishment and maintenance of comprehensive training records for the staff, including details on the OJT received.

4.2.2.2 The fact that many States have not yet established a training policy creates limitations as such a policy, together with the availability of sufficient funds for the effective implementation of the training programmes, is the building block of the CAA's training system. In the absence of such a policy, or when the training policy exists but is not comprehensive or appropriately implemented, States may lack or have insufficiently detailed training programmes for some

or all of the CAA inspector positions; training records may be partially maintained (consisting mainly of a compilation of course completion certificates); and the OJT may not be performed by sufficiently qualified and experienced staff and/or may not be documented in the training records.

4.2.2.3 In most cases, the lack of sufficient financial resources remains the main obstacle to the provision of training, which results in the inspectorate and relevant staff not having all qualifications needed to effectively perform licensing, certification, authorization, approval and surveillance activities.

4.3 HIGHLIGHTS OF ISSUES IDENTIFIED IN THE PEL AREA

4.3.1 Approving training programmes related to the first issuance of licences and ratings

4.3.1.1 More than 55 per cent of the States have not implemented an effective process to approve training programmes related to the first issuance of licences and ratings. In most of the States, the system for approval is not fully developed and when tools for approval are available, the qualifications and training of the inspectors may be insufficient for performing the review and approval in an effective manner. Often implementation is not comprehensive and does not include, as applicable, domestic and foreign programmes, for pilots, air traffic controllers and aircraft maintenance engineers. Furthermore, amendments to training programmes are most of the time not approved by the authority.

4.3.2 Ensuring supervision and control of flight and practical test delivery by the designated flight and practical examiners

4.3.2.1 More than 50 per cent of the States have not implemented an effective system for the supervision and control of flight and practical test delivery in order to ensure consistency and reliability of testing by the designated flight and practical examiners related to flight crew, air traffic controller and aircraft maintenance engineer licences. Many States have not taken into account all aspects necessary to appropriately implement this requirement, including the supervision of designated examiners, an adequate level and frequency of surveillance activities, and the availability of procedures and guidance material for inspectors, on the supervision and control of flight and practical test examiners. Also not taken into account are aspects related to the

development of procedures and checklists for the observation of examinations and for the assessment of the competency of examiners during the conduct of examinations and checks.

4.3.3 Implementing a surveillance programme of approved training organizations (ATOs)

4.3.3.1 About 50 per cent of States have not implemented an effective programme for the surveillance of the ATOs for pilots, air traffic controllers and aircraft maintenance engineers. This applies not only to domestic ATOs, but also to foreign ATOs which provide training to the staff of some of the service providers in the State. Many States have not ensured consistency in their methods of surveillance nor appropriately determined the frequency of inspections. In addition, random inspections are often not included in the surveillance programme. Many States have not developed and maintained an effective system to keep track of their surveillance activities in relation to ATOs.

4.3.4 Performing surveillance activities in relation to air traffic controller (ATCO) licences

4.3.4.1 About 70 per cent of the States which have issued ATCO licences have not established and implemented an effective system for their surveillance in order to ensure that licence holders continue to comply with the conditions under which their privileges were granted. Deficiencies have been found in such areas as the development and implementation of surveillance programmes and plans, the development of inspector procedures and guidance, the conduct of random and periodic inspections and the analysis of surveillance data to determine areas of concern, such as non-compliance with the regulations and unsafe practices.

4.3.5 Supervising and controlling designated medical examiners (DMEs)

4.3.5.1 More than 50 per cent of the States have not implemented a system for the supervision and control of DMEs. In most of the States, a qualified medical assessor has not been appointed and personnel licensing staff who designate medical examiners are not sufficiently qualified and experienced to conduct effective supervision and control. In many States, indoctrination and familiarization training of the appointed assessors have not been tailored to enable them to clearly understand their duties and responsibilities within the CAA, particularly in respect to the supervision and control of DMEs. These tasks include the inspection of premises and equipment, the verification of the use of the latest ICAO SARPs by DMEs as applicable, the provision of up-to-date



refresher training, the timely transmittal of reports to the licensing authority and record keeping.

4.4 HIGHLIGHTS OF ISSUES IDENTIFIED IN THE OPS AREA

4.4.1 Establishing procedures for the issuance of approvals and authorizations contained in the operations specifications

4.4.1.1 More than 60 per cent of the States have not developed procedures for the issuance of approvals and authorizations contained in the operations specifications associated with the air operator certificate (AOC), including reduced vertical separation minima (RVSM), extended diversion time operation (EDTO), Required Navigation Performance (RNP), minimum navigation performance specification (MNPS), and performance-based navigation (PBN). Due to the level of qualifications and experience required to establish such procedures, most of the States only address the administrative aspects of the procedures, rather than also focusing on their technical components for the issuance of approvals and authorizations contained in the operations specifications. In most States, the CAA has not established all the elements needed to ensure proper coordination between its airworthiness and operations inspectors, including documented processes, inspector procedures, inspector guidance (including checklists), and defined areas of responsibility.

4.4.2 Implementing operations evaluations for the conduct of CAT II and III instrument approaches

4.4.2.1 With specific reference to evaluations for the conduct of CAT II and III instrument approaches, a protocol question (PQ) on this issue was added in 2012. Although a limited number of States were assessed against this PQ, the results for these States show that a majority of them have not established and implemented an effective system to carry out an operations evaluation for the conduct of CAT II and III instrument approaches.

4.4.2.2 The approval of CAT II and III instrument approaches requires the use of a documented process to evaluate operational procedures, training and qualifications of the flight crew, as well as aircraft and maintenance aspects of the approval. In the majority of these States, coordination between the aircraft operations and airworthiness personnel is not clearly defined and included in the processes

and procedures used for approval. It therefore becomes challenging for them to implement a comprehensive system covering all the aspects to be assessed before the issuance of the approval.

4.4.2.3 In particular, many of these States have not ensured, in their approval policy and procedures, that CAT II and III instrument approach and landing operations would not be authorized unless runway visual range (RVR) information is provided. In addition, many of these States have not implemented a system to keep all necessary records regarding the CAT II and III evaluation activities performed as part of the initial evaluation process and after the approval is granted.

4.4.3 Ensuring that air operators have implemented an SMS acceptable to the State

4.4.3.1 Close to 60 per cent of States have not ensured that their air operators have established an SMS. According to Annex 19, the SMS of a certified operator of aeroplanes or helicopters authorized to conduct international commercial air transport shall be made acceptable to the State of the Operator. Just over half of the States have ensured that their operators nominate a post holder responsible for the development and establishment of the SMS and that the post holder's functions and responsibilities are properly defined and documented.

4.4.3.2 More than half of the States have not ensured compliance with Annex 6, Part I requirement, whereby an operator of an aeroplane of a maximum certificated take-off mass in excess of 27 000 kg must establish and maintain a flight data analysis programme as part of its SMS as well as ensure that the flight data analysis programme contains adequate safeguards to protect the source(s) of the data. In many cases, although regulatory requirements may have been established, authorities have not followed up with effective acceptance and surveillance of their operators' SMS, due to the lack of appropriate procedures and inspectors who have been adequately trained to evaluate the effectiveness of an SMS.

4.4.4 Reviewing dangerous goods procedures of air operators

4.4.4.1 Most States have not implemented an effective system for safety oversight of the various entities involved in the transport of dangerous goods, including shippers, packers, cargo handling companies and air operators. Regarding the

latter, in about 70 per cent of States, the authorities have not effectively reviewed the dangerous goods procedures of air operators, contained in the operations and ground handling manuals, mostly due to a lack of qualified dangerous goods inspectors. Many of the States have not kept records relating to dangerous goods-related approvals. In addition, in many States, dangerous goods inspector procedures have not been established and implemented.

4.4.5 Establishing and implementing a surveillance programme

4.4.5.1 About 60 per cent of the States have not implemented a comprehensive surveillance programme to verify that all AOC holders in the State comply, on a continuing basis, with national regulations, international standards as well as the provisions of the AOCs and associated operations specifications. Furthermore, an equal percentage of States do not verify that foreign air operators comply, on a continuing basis, with international standards and the provisions of their AOCs and associated operations specifications.

4.4.5.2 The surveillance programmes established by the States are often not fully implemented and records of inspections conducted are not systematically kept. Many States have not determined the frequency of inspections based on available safety indicators or results of previous inspections, and have not taken into account high-risk items detected over a series of inspections. In addition, over 60 per cent of the States have not included risk-based ramp inspections of aircraft operated by national and foreign air operators in their existing surveillance programmes.

4.5 HIGHLIGHTS OF ISSUES IDENTIFIED IN THE AIR AREA

4.5.1 Regulating the approved maintenance organization (AMO)'s SMS

4.5.1.1 About 60 per cent of the States have either not promulgated regulations to require AMOs providing services to operators of aeroplanes or helicopters engaged in international commercial air transport to implement an SMS, or promulgated regulations which do not fully comply with Annex 19 provisions with respect to either the framework of the SMS or the requirement that the SMS shall be acceptable to the State responsible for the organization's approval. In practice, those States either do not ensure the implementation of SMS when issuing the AMO approval, or accept an SMS

which is not in compliance with the framework elements contained in Annex 19, Appendix 2.

4.5.1.2 According to Annex 19, AMOs providing services to operators of aeroplanes or helicopters engaged in international commercial air transport shall implement an SMS. The SMS shall be established in accordance with the framework elements contained in Annex 19, Appendix 2, and be commensurate with the size of the AMO and the complexity of its aviation activities. In addition, the SMS shall be made acceptable to the State(s) responsible for the organization's approval.

4.5.2 Implementing a formal surveillance programme to verify that all AMOs and AOC holders comply on a continuing basis with airworthiness-related national regulations and international standards

4.5.2.1 About 60 per cent of the States have not developed a comprehensive surveillance programme with appropriate frequency of surveillance activities, or have not implemented or fully implemented the surveillance programme. Common issues with the surveillance programmes include:

- a) The surveillance programme does not cover all aspects of the operation of the AOC holder or AMO;
- b) There is no mechanism established and implemented to ensure that the frequency of the surveillance activities is appropriate, which results in insufficient surveillance; and
- c) The surveillance programme does not include random checks.

4.5.2.2 The continued validity of an AOC or AMO certificate depends on the AOC holder or the AMO remaining in compliance with the applicable national regulations, international standards, AOCs and the corresponding operations specifications or the AMO certificates. States are therefore required to verify, on a continuing basis, the compliance status of AOC holders and AMOs. To achieve this objective, States need to develop and implement a formal surveillance programme which should cover all significant aspects of the operator's or organization's procedures and practices with appropriate frequency. In addition, scheduled surveillance activities should be augmented by periodic random checks on all aspects of the operation of the AOC holder or AMO.

4.5.3 Developing and implementing procedures for the verification of operations derived-equipment which are not part of the type certification of aircraft

4.5.3.1 Although over 70 per cent of the States have promulgated regulations for operations-derived equipment which are not part of the type certification of aircraft, more than 50 per cent of the States have either not developed a procedure for the verification of such equipment, or have developed insufficient procedures and associated checklists, which do not provide sufficient details to ensure that all required equipment are installed and maintained for the types of operation to be conducted.

4.5.3.2 In addition to the minimum equipment necessary for the issuance of a certificate of airworthiness, certain instruments and equipment should also be installed or carried, as appropriate, in aeroplanes according to the aeroplane used and to the circumstances under which the flight is to be conducted. Such instruments and equipment include flight data recorder (FDR), cockpit voice recorder (CVR), ground proximity warning system (GPWS), emergency locator transmitter (ELT), airborne collision avoidance system (ACAS), and those for visual flight rules (VFR) flights, over water operations, flights over designated land, high altitude flights as well as operations in icing conditions.

4.5.4 Conducting ongoing surveillance of air operators' reliability programmes and initiating special evaluations or imposing special operational restrictions when information obtained from reliability monitoring indicates a degraded level of safety

4.5.4.1 About 50 per cent of the States either have not established and implemented a formal system to conduct ongoing surveillance of air operators' reliability programmes, or have not established and implemented a documented process to initiate special evaluations or impose special operational restrictions when information obtained from reliability monitoring indicates a degraded level of safety, thus they cannot ensure that appropriate actions are taken in a timely manner. When applicable, the air operator should develop a reliability programme in conjunction with the maintenance programme in order to ensure the continuing airworthiness of aircraft. The purpose of the reliability programme is to ensure that the aircraft maintenance programme tasks are effective, and their recurrence at regular intervals is adequate.

4.5.4.2 As part of the maintenance programme approval process, the operator should submit a reliability programme and appropriate information to the CAA for evaluation and approval. The reliability programme should be administered and controlled by the operators and monitored by the airworthiness inspectors. Reliability monitoring is also essential for the approval of extended diversion time operations (EDTOs). In the event that an acceptable level of reliability is not maintained, that significant adverse trends exist or that significant deficiencies are detected in the design or the conduct of the operation, the State of the Operator should initiate a special evaluation, impose operational restrictions, if necessary, and stipulate corrective actions for the operator to adopt in order to resolve the problems in a timely manner or suspend the EDTO authorization unless there is a corrective action plan acceptable to the CAA.

4.5.5 Implementing airworthiness evaluation procedures for the conduct of CAT II and III instrument approaches

4.5.5.1 With respect to the airworthiness evaluation for the conduct of CAT II and III instrument approaches, a specific protocol question (PQ) on this issue was added in 2012. Although a limited number of States were assessed against this PQ, the results show that a majority of these States have not established and implemented a documented process to evaluate the aircraft, equipment reliability, maintenance procedures as well as the training provided to maintenance technicians. The coordination between the CAA's aircraft operations and airworthiness specialists is, in many cases, not appropriately addressed and documented in the procedures.

4.5.5.2 Consequently, many States cannot ensure that all aspects required for the approval are properly reviewed and verified before the issuance of the approval for CAT II and III operations. Approvals for the conduct of CAT II and III instrument landing system (ILS) approaches require prior evaluations, appropriately coordinated between the CAA's aircraft operations and airworthiness specialists. Flight operations specialists should evaluate the operational procedures, training and qualifications related aspects, while airworthiness specialists should evaluate the aircraft, equipment reliability and maintenance procedures. These evaluations may be accomplished separately, but should be coordinated to ensure that all aspects necessary for safety have been addressed before any approval is issued.

4.6 HIGHLIGHTS OF ISSUES IDENTIFIED IN THE AIG AREA

4.6.1 Ensuring the effective investigation of aircraft serious incidents as per Annex 13

4.6.1.1 More than 60 per cent of the States have not established a process to ensure the investigation of aircraft serious incidents, as required by Annex 13. In most cases, there is insufficient or no guidance established by the State (including actions to be taken, timelines and personnel to be involved in the assessment and decision-making processes) to support the assessment process, following the receipt of an incident notification, in order to decide whether the State will launch an independent investigation as per Annex 13. The timely identification of serious incidents is all the more challenging for States which do not have a permanent, independent investigation authority or have such an authority but without all the necessary qualified and experienced personnel.

4.6.1.2 In practice, the effective investigation of serious incidents is also affected by the lack of immediate reporting — or, worse, the total lack of reporting — of serious incidents (or incidents that may be serious incidents) by service providers (e.g. air operators and ATS providers) to the designated State authority (ideally the State's permanent, independent investigation authority, when such an entity has been established). Only a small number of States have a comprehensive process as well as the necessary qualified and experienced personnel (technical staff and management personnel of the accident investigation authority) to ensure that investigations of serious incidents are effectively carried out when required by Annex 13. The lack of thorough, independent investigations of serious incidents may leave unidentified and unacted upon safety issues, which could then lead to an accident or even a major fatal accident.

4.6.2 Providing sufficient training to aircraft accident investigators

4.6.2.1 More than 60 per cent of the States have not developed a comprehensive and detailed training programme for their aircraft accident investigators. Even though many States have started developing such a training programme, the content is often insufficient. In many cases, recurrent and specialized/advanced training are not addressed and OJT is not addressed in sufficient, practical details, including the phases of the OJT (e.g. observation or performance of tasks under supervision), the necessary qualification and experience of OJT instructors, and the assessment of the OJT outcome.

As for the implementation of training programmes, it is often limited by an insufficient budget and by an ad hoc rather than a planned approach to the provision of training. Only a small number of States — mostly States with more mature accident investigation authorities — provide their investigators with the necessary training to effectively conduct their tasks. The provision of investigation-related training is particularly challenging for States which do not have a permanent investigation authority.

4.6.2.2 It is worth noting that training is also necessary for technical personnel of States which, through signed agreements, fully delegate accident and serious incident investigations to another State or to a Regional Accident and Incident Investigation Organization (RAIO), as the State of Occurrence remains responsible for carrying out the first actions (including the preservation of evidence) following the occurrence. Insufficient training contributes to many shortcomings, including:

- a) lack of timely launching of the investigation when needed (in particular for serious incidents);
- b) lack of preservation of essential, volatile evidence following an accident or serious incident;
- c) poor management of investigations; and
- d) poor investigation reports and/or safety recommendations.

4.6.3 Ensuring proper coordination and separation between the "Annex 13" investigation and the judicial investigation

4.6.3.1 More than 60 per cent of the States do not have effective and formal means, including appropriate provisions in the legislation and formal arrangements, for the proper coordination of investigation activities between the investigation authority and the judicial authority. Such means are essential to ensure the necessary separation between the two investigations (e.g. for the conduct of interviews with witnesses and for the analysis of the information collected). They are also necessary for governing the coordination of activities on the scene of an accident (e.g. for the securing and custody of evidence, and the identification of victims) and for CVR and FDR read-outs and the relevant examinations and tests, in particular to ensure that investigators have ready access to all relevant evidence and that flight recorder read-out analysis and other necessary examinations and testing are not impeded or significantly delayed due to judicial proceedings.

4.6.3.2 While provisions in the primary legislation as well as formal arrangements are needed to address the above-mentioned issues, in practice, many States have initiated actions (such as seminars/workshops or courses involving accident investigation authorities and judicial authorities) to help build a constructive dialogue and understanding between the two communities, which have distinct legal basis and procedures. Making such arrangements is much more challenging for States which do not have a permanent, independent accident investigation authority.

4.6.4 Establishing and implementing a State's mandatory and voluntary incident reporting systems

4.6.4.1 More than 50 per cent of the States have not established an effective mandatory incident reporting system, as required by Annex 19. Such a system needs to be supported by the appropriate legislation/regulations, procedures and guidance material. Many of these States have not clarified in their regulations the types of occurrence to be reported by service providers in the various aviation domains, and under which timescale. For example, it is advisable that the reporting of non-serious incidents be done in 24 or 48 hours after the occurrence, as these need to be notified to the appropriate authority (ideally directly to the State's accident investigation authority, when established) as soon as possible and by the quickest means available. Incidents other than serious incidents are normally received and processed by the State's CAA and are also analysed by the service provider itself within the framework of its SMS. An ineffective State mandatory reporting system not only affects the effectiveness of the CAA's continuous surveillance programme, but also limits the ability of the State to follow the data-driven approach which is necessary for the implementation of the State Safety Programme (SSP).

4.6.4.2 With respect to the State voluntary incident reporting system, which is also required by Annex 19, more than 70 per cent of the States have not effectively implemented such a system, which should be non-punitive and afford protection to the sources of information. The effective implementation of a voluntary incident reporting system requires not only the proper legislation, procedures and mechanisms to have been established by the State, but also significant efforts by the authority designated to manage the system to encourage reporting within the State's aviation community and to establish trust in the non-punitive nature of the system. Such a voluntary reporting system at State level complements the voluntary reporting systems which should be established within each service provider having an SMS. It enables the capture of safety issues and hazards which

may not otherwise be captured within the State mandatory incident reporting system.

4.6.5 Establishing an aircraft accident and incident database and performing safety data analyses at State level

4.6.5.1 Almost 60 per cent of the States have not established an accident and incident database to facilitate the effective analysis of information on actual or potential safety deficiencies and to determine any preventive actions required. Over the last decade, many States have been trained in the use of the European Co-ordination Centre for Aviation Incident Reporting Systems (ECCAIRS) database, which enables States to ensure compatibility with the ICAO accident/incident data reporting (ADREP) taxonomy. However, many States do not have the qualified technical personnel to properly administer their database. In addition, the data collected is not shared with the concerned stakeholders in order to identify actual or potential safety deficiencies, adverse trends and to determine any preventive actions required. The unavailability of such information affects the ability of the State to effectively implement an SSP.

4.7 HIGHLIGHTS OF ISSUES IDENTIFIED IN THE ANS AREA

4.7.1 Ensuring that the ATS provider has implemented an SMS acceptable to the State

4.7.1.1 More than 70 per cent of the States have not effectively ensured that their air traffic service (ATS) providers have established and implemented an SMS that is acceptable to the State. As a consequence, most States have performed limited or no surveillance on the ATS provider's SMS, although, in practice, the necessary regulatory requirements for the establishment of an SMS by the ATS provider have been established by the State and implemented by the service provider.

4.7.1.2 Most States have not developed a formal process for the acceptance of the ATS provider's SMS that includes aspects related to safety performance indicators, the associated target and alert levels, which should be agreed upon and monitored as needed by the State's CAA. This was often due to the lack of sufficiently qualified and trained technical personnel within the CAA for this type of activities.

4.7.2 Performing safety assessments with respect to significant changes affecting the provision of ATS

4.7.2.1 More than 70 per cent of the States have not ensured that their ATS providers carry out safety assessments with respect to proposals for significant airspace reorganizations, for significant changes affecting the provision of ATS applicable to an airspace or an aerodrome, and for the introduction of new equipment, systems or facilities. Such changes include reduced separation minima, new operating procedures, a reorganization of the ATS route structure, a resectorization of the airspace, physical changes to the layout of runways and/or taxiways at an aerodrome, and implementation of new communications, surveillance or other safety significant systems and equipment.

4.7.2.2 While in practice, ATS providers may perform safety assessments for significant changes, most States have not established and implemented the necessary means, including appropriate procedures and sufficiently qualified staff, to ensure that these assessments are carried out and properly documented in a comprehensive and detailed manner, following an approved methodology.

4.7.3 Performing surveillance of the State's procedures specialists or service providers (PANS-OPS)

4.7.3.1 More than 70 per cent of the States have not established and implemented an effective system to conduct surveillance of their flight procedures specialists or their service providers, as applicable, mostly due to the lack of appropriate procedures and the lack of qualified technical personnel within the CAA for this specific domain. PANS-OPS procedures development and upkeep are very specialized processes with limited numbers of specialists available. In many cases, PANS-OPS procedures development and upkeep are contracted out or left to the service provider to execute and are not closely monitored through an effective surveillance programme by the CAA. In the absence of an effective safety oversight system in most States, published flight procedures are not reviewed periodically to ensure that they continue to comply with changing criteria and meet user requirements.

4.7.4 Performing surveillance in the area of search and rescue (SAR)

4.7.4.1 About 70 per cent of the States have not established and implemented an effective system to conduct surveillance

of their Rescue Coordination Centres (RCCs) and rescue subcentres (RSCs), if any. In many States, search and rescue (SAR) services are provided by military authorities, and thus coordination between these military authorities and the State's CAA is essential. In practice the coordination (e.g. on the basis of a Memorandum of Understanding) is often limited to the operational aspect of SAR and does not clearly address the conduct of surveillance activities and the timely resolution of possible deficiencies identified as a result of such activities. Common factors preventing the effective surveillance of the RCCs are the lack of sufficiently qualified inspectorate staff and the absence of a formal surveillance programme.

4.7.5 Performing surveillance of the provision of cartographic services

4.7.5.1 More than 60 per cent of the States have not established and implemented an effective system to conduct effective surveillance of the entities providing cartographic services (which may be private entities operating under a contract which does not contain any clause regarding safety oversight) as well as effective mechanisms for the timely resolution of identified deficiencies. In many States, while the functions related to oversight of the entities providing cartographic services are assigned to the CAA's aeronautical information service (AIS) inspectors, there is a lack of documented evidence of surveillance activities carried out and of any corrective actions requested by the CAA and taken by the providers.

4.8 HIGHLIGHTS OF ISSUES IDENTIFIED IN THE AGA AREA

4.8.1 Implementing aerodrome certification requirements

4.8.1.1 Almost 60 per cent of the States have not fully implemented the requirements for the certification of aerodromes. More than 50 per cent of the States have not established a comprehensive aerodrome certification process, including all the necessary assessments. In addition, almost 60 per cent of the States have not established, in the framework of their certification process, a mechanism based on safety assessments, for reviewing and accepting non-compliances with established requirements. Moreover, in almost 70 per cent of the States, the CAA does not have

a sufficient number of qualified and experienced aerodrome technical staff with the appropriate mix of technical disciplines to be able to cover all aspects involved in the certification of aerodromes.

4.8.1.2 The challenge faced by most States that have not certified their aerodromes is to ensure that, after the audit of their aerodrome operators, further steps, such as the conduct of safety assessments of all the identified non-compliances, are necessarily taken by the aerodrome regulatory authority. These steps should enable:

- a) the categorization of the identified deficiencies, based on their impact on safety and using a risk assessment mechanism;
- b) the determination of the mitigation measures to be taken to reduce the risk to an acceptable level, if necessary;
- c) the granting of associated exemptions, if required; and
- d) the issuance of the aerodrome certificate with the necessary limitations/specifications.

4.8.2 Ensuring that aerodrome operators receiving international flights have implemented an SMS acceptable to the State

4.8.2.1 More than 80 per cent of the States have not ensured that aerodrome operators receiving international flights have implemented an SMS acceptable to the State, as part of their aerodrome certification process. In addition, almost 70 per cent of the States do not have a system in place to ensure that aerodrome operators collect, monitor and analyse safety occurrences and trends and take appropriate action. Most of these States have not defined the maturity level required for the first acceptance of the aerodrome operator's SMS, expressed in terms of the requisite SMS components and elements. In addition, in most cases, aerodrome inspectors have not received all necessary training regarding the acceptance and surveillance of an aerodrome operator's SMS, including aspects related to safety performance indicators and the associated target and alert levels, which should be agreed upon by the State's CAA.

4.8.3 Establishing and implementing a formal surveillance programme for certified aerodromes, with associated procedures and plans

4.8.3.1 More than 50 per cent of the States have not established and implemented a formal surveillance programme for their certified aerodromes with associated procedures and periodic surveillance plans. States are required to establish and implement a surveillance programme to ensure that aerodrome certificate holders meet, on a continuous basis, their obligations under the certificate and the requirements of the accepted/approved aerodrome manual. This would normally include surveillance procedures for each type of surveillance activities, as well as periodic surveillance plans with adequate frequencies reflecting the maturity of the certificate holder. Continuous surveillance should also include unannounced inspections, as needed.

4.8.4 Establishing and implementing integrated strategies, including Runway Safety Teams, for runway incursions and collisions avoidance at aerodromes

4.8.4.1 More than 60 per cent of the States do not ensure that their aerodrome operators have established and implemented integrated strategies, including Local Runway Safety Teams (LRSTs), for the prevention of runway incursions and other accidents and incidents at aerodromes. The primary role of LRSTs should be to develop an action plan for runway safety, advise management, as appropriate, on potential runway safety issues and recommend strategies for hazard removal and mitigation of the residual risk.

4.8.4.2 Although not considered a regulatory authority or intended to replace any required component of an SMS, the LRST programme is designed to improve and support runway safety by integrating the safety systems of the participating organizations. A successful LRST programme therefore requires all key stakeholders to cooperate in a collaborative

and multidisciplinary manner. Although ICAO has published guidance and has delivered a number of global and regional workshops to promote the establishment and operation of LRSTs and their support by the State's CAA, the creation and effective operation of LRSTs remain affected by a number of challenges. These include:

- a) the lack of regulatory framework and/or guidance material issued at State level;
- b) the possible resistance to share data among the various stakeholders (including the aerodrome operator, ANS provider and air operators involved); and
- c) the possible lack of maturity of the stakeholders' SMS, in particular with respect to hazard identification and risk assessment and mitigation.

4.8.5 Establishing and implementing a quality system to ensure the accuracy, consistency, protection and integrity of aerodrome-related safety data published in the State's AIP

4.8.5.1 More than 70 per cent of the States have not established and implemented a quality system to verify the accuracy of aerodrome data to ensure compliance with the regulations, and to ensure that the accuracy, integrity and protection requirements for aeronautical data reported by the aerodrome operator are met throughout the data transfer process from the survey/origin to the next intended use. This generally results in the publication of inaccurate or outdated data in the AIP of these States.



Chapter 5

COMPLIANCE CHECKLISTS

5.1 PROGRESS OF STATES IN COMPLETION OF COMPLIANCE CHECKLISTS

5.1.1 The compliance checklists (CC) have been established to assist Member States and ICAO in ascertaining the status of implementation of SARPs and in identifying the level of compliance of their national regulations and practices vis-à-vis the relevant SARPs.

5.1.2 During the 2013 – 2015 period covered in this report, there was a 14.5 per cent improvement in the number of SARPs reported by States using the CCs, as compared to that of the previous period (2005 to 2010), going from 49 per cent to 63.5 per cent.

5.1.3 All but 19 of ICAO's Member States have reported various degrees of completion in their level of compliance to the SARPs. An improvement in the quantity and quality of CC reporting was expected as a result of the following:

- a) increased awareness and proficiency with the online framework (OLF) tools following regional- and State- sponsored USOAP CMA workshops;
- b) completion of Annex 9 following State letter EC 6/3-15/90; and
- c) development of the guidance material related to determination differences, with examples which will be included in the upcoming *Manual on Notification and Publication of Differences*.

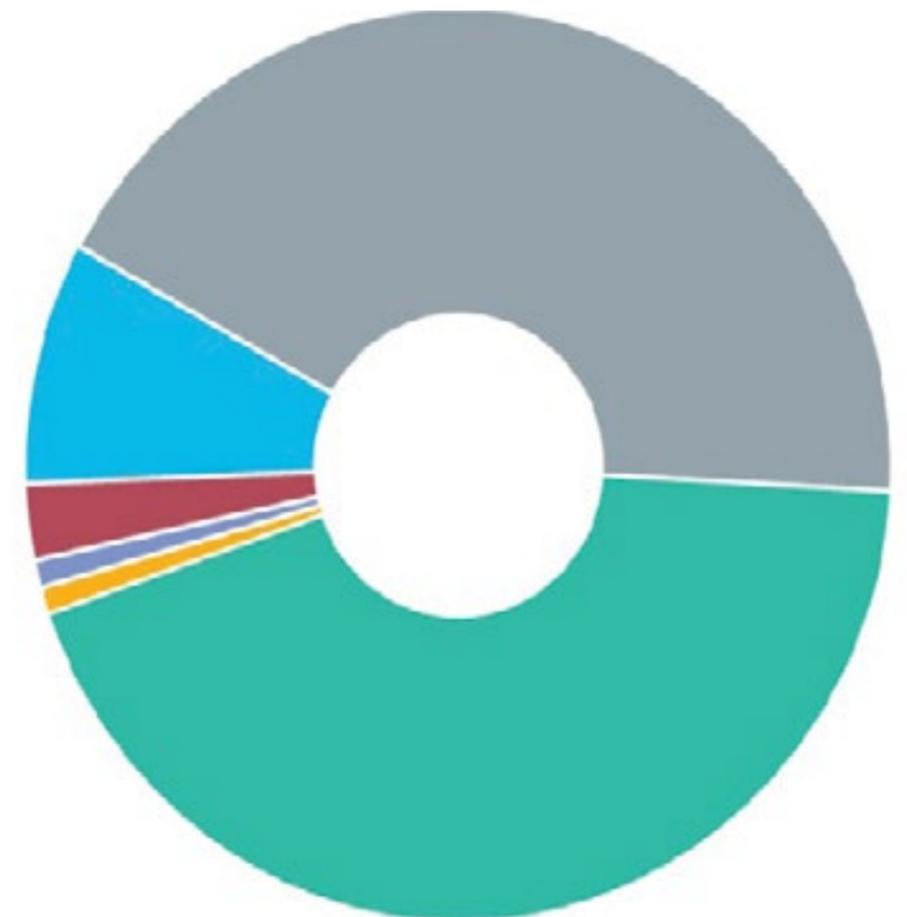
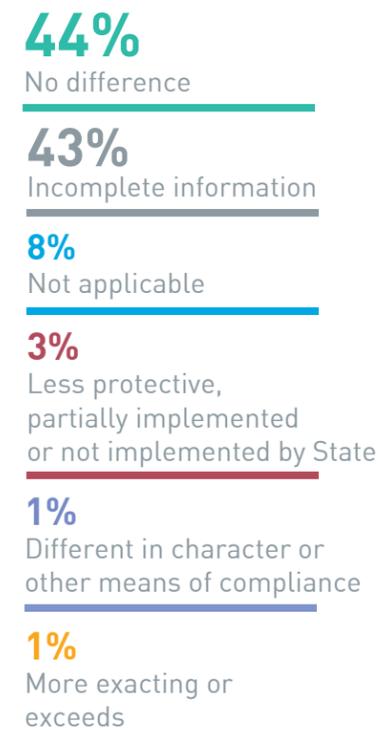
5.2 LEVEL OF COMPLIANCE TO SARPS REPORTED BY STATES

5.2.1 The following graphs depict two of the categories used as a guide in determining the nature of a State's non-compliance with a SARP. These categories are:

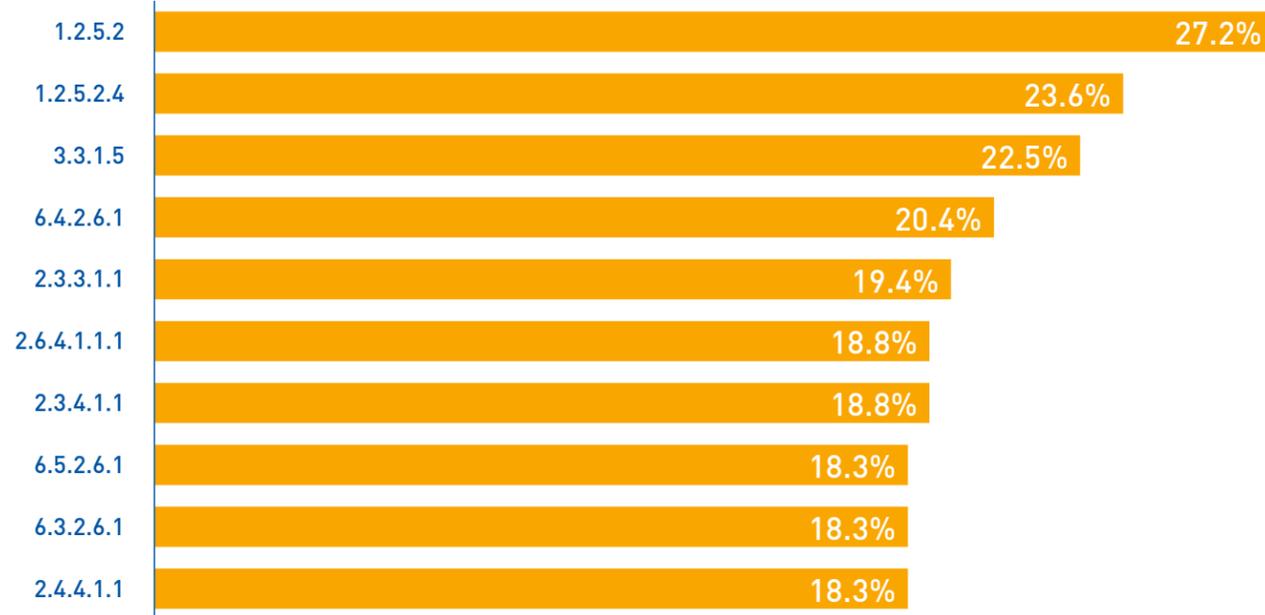
More exacting or exceeds — This category applies when the national regulation is more exacting than the corresponding ICAO SARP or imposes an obligation within the scope of the Annex which is not covered by an ICAO Standard.

Less protective or partially implemented/not implemented — This category applies when the national regulation is less protective than the corresponding ICAO SARP or when no national regulation has been promulgated to address the corresponding ICAO SARP, in whole or in part.

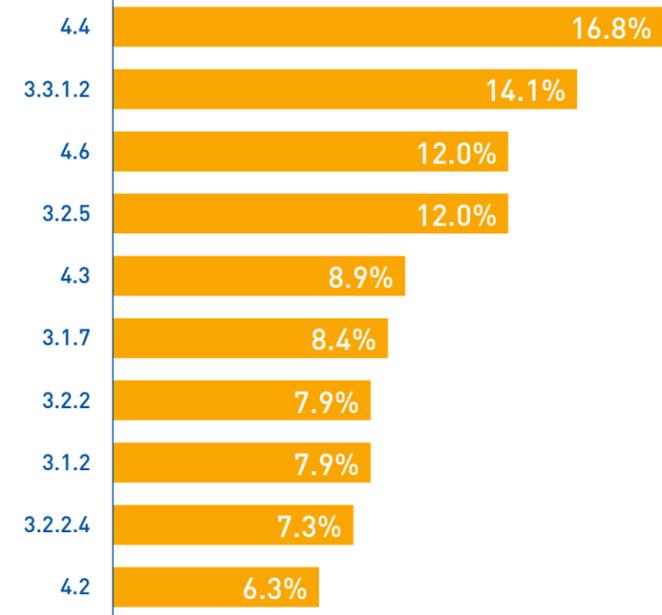
Reported level of compliance to SARPs as reported by Member States through the Compliance Checklists



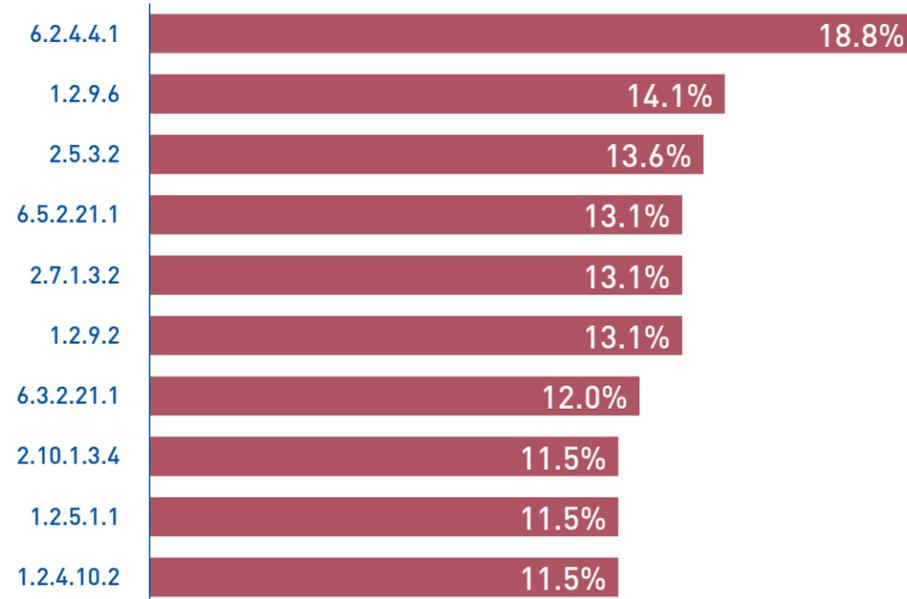
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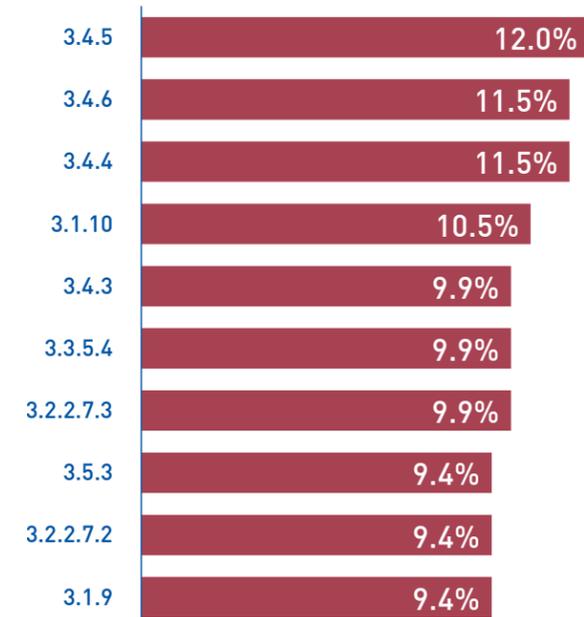
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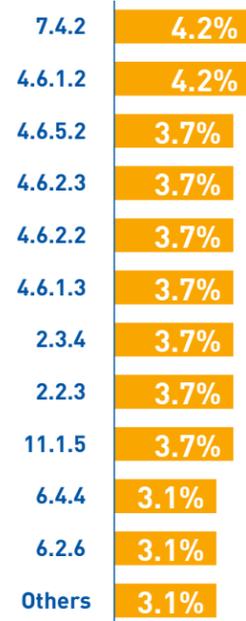
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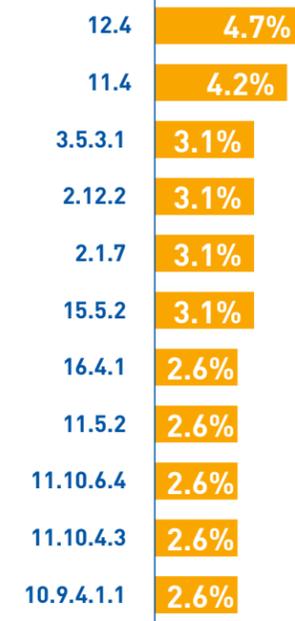
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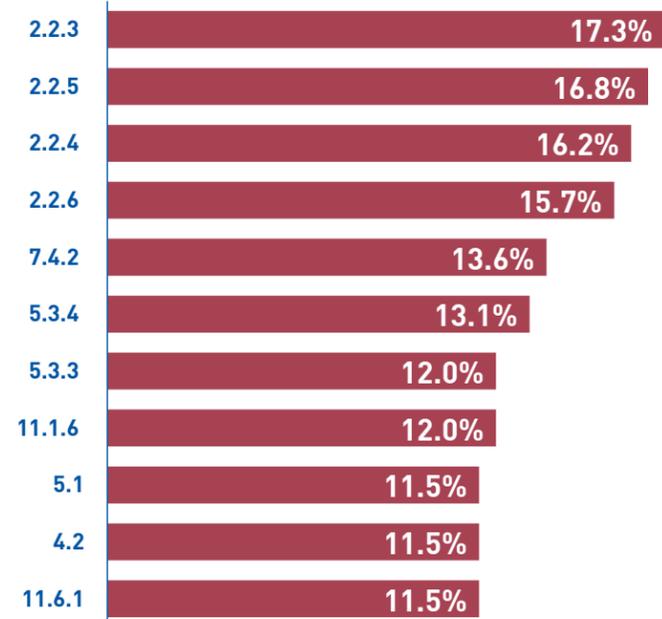
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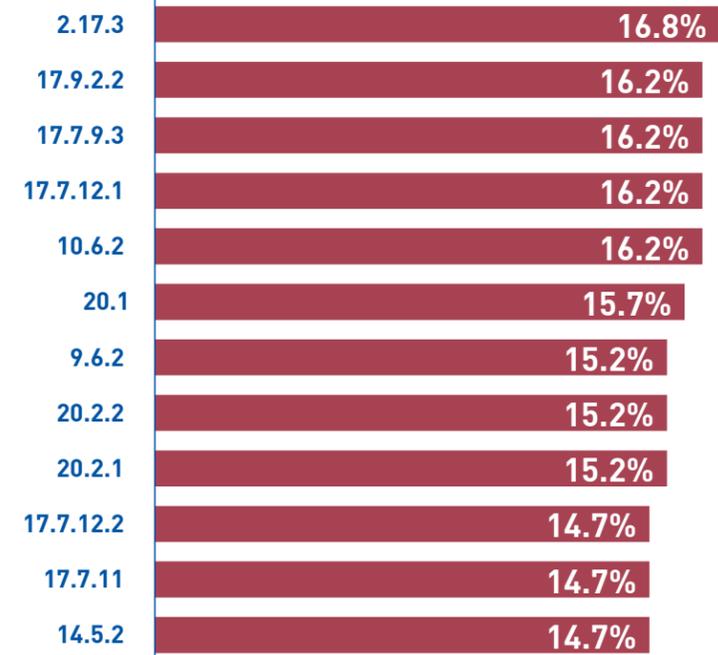
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Top Annex 3 provisions reported as “Less Protective”



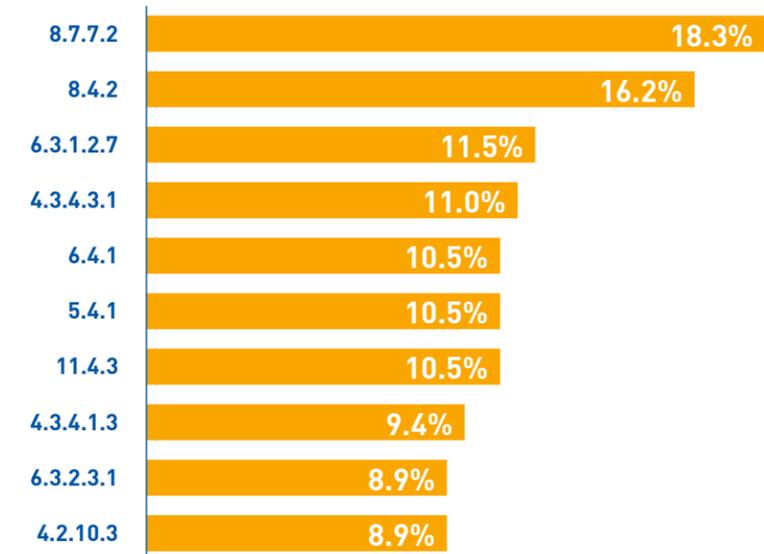
Top Annex 4 provisions reported as “Less Protective”



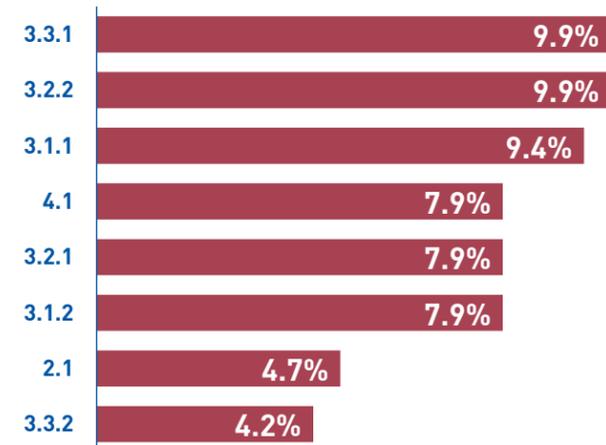
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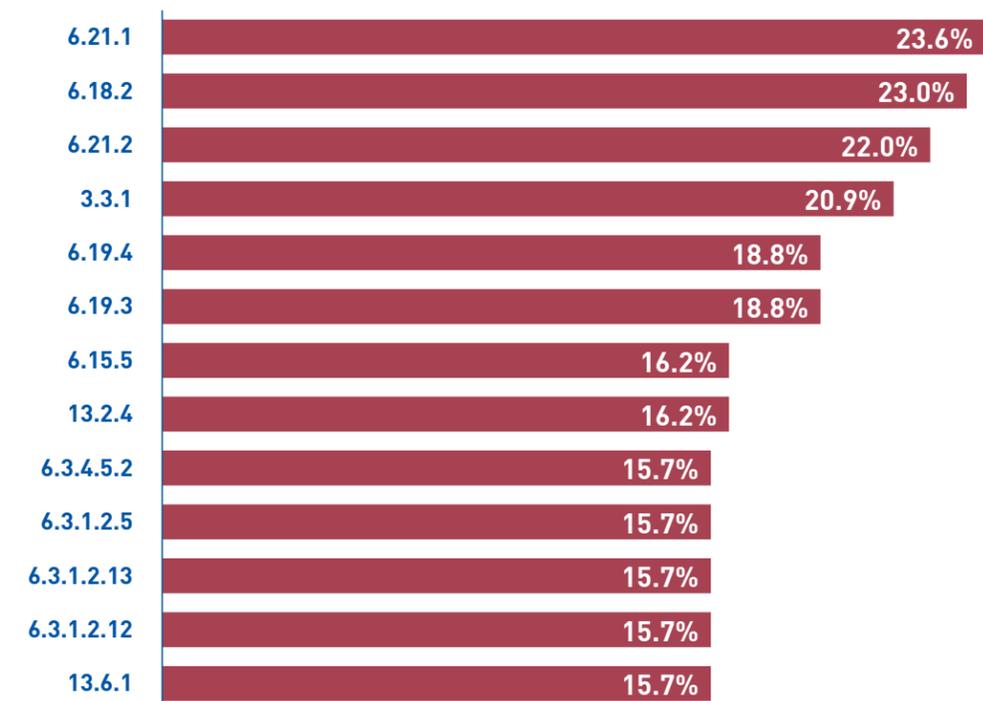
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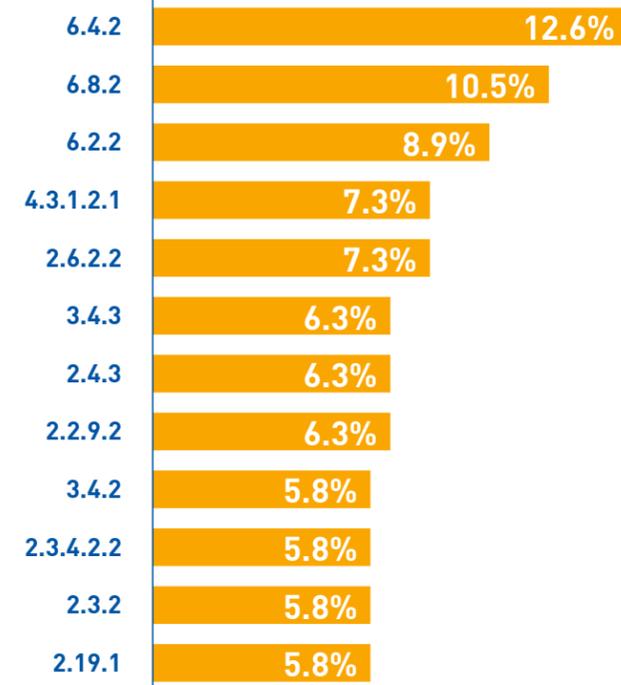
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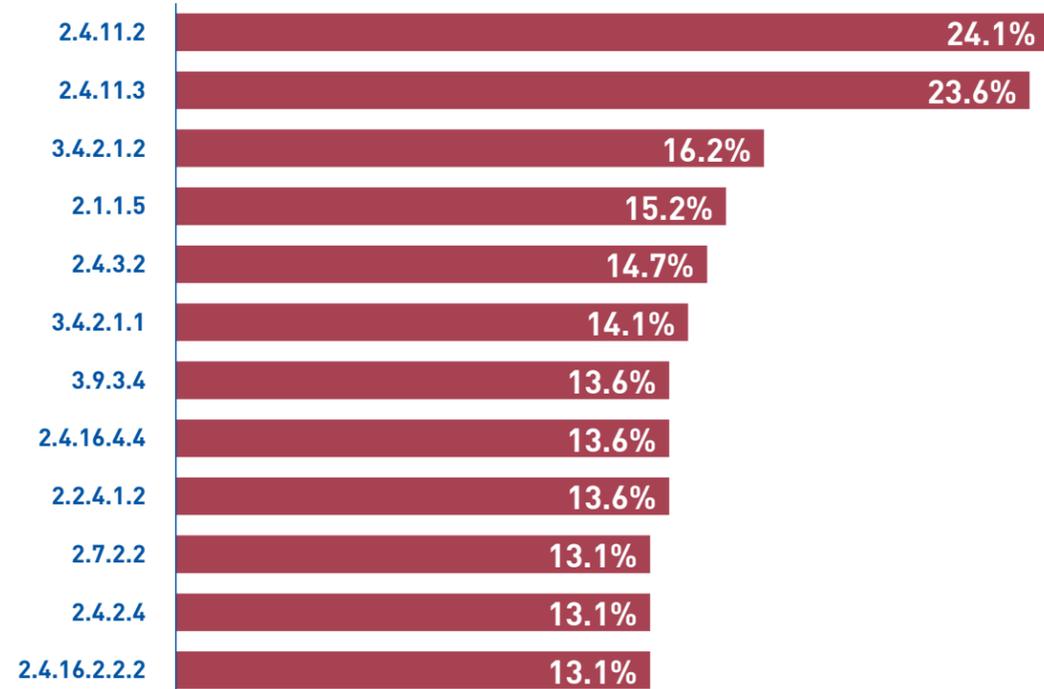
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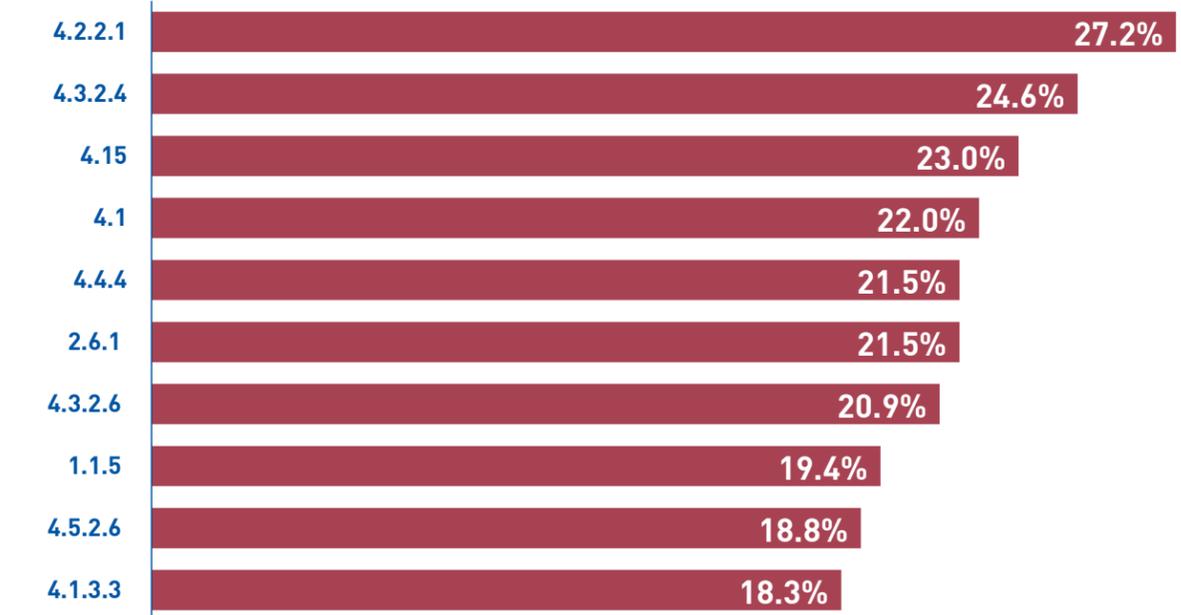
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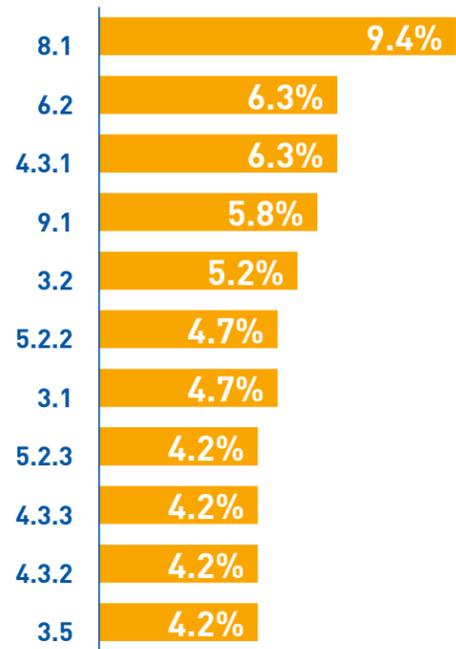
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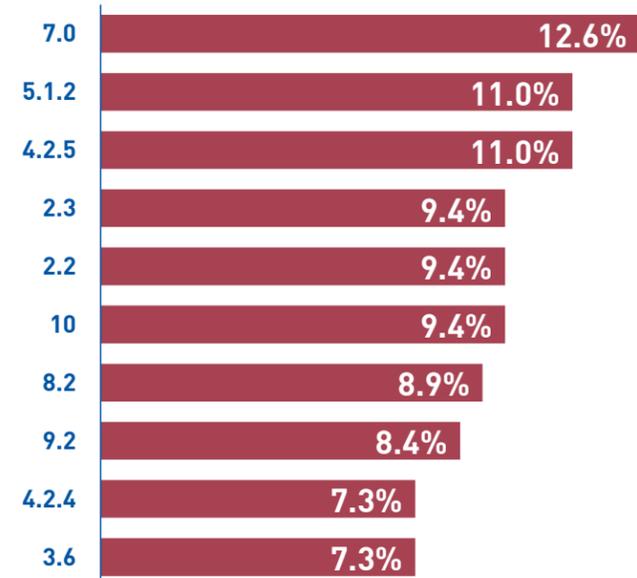
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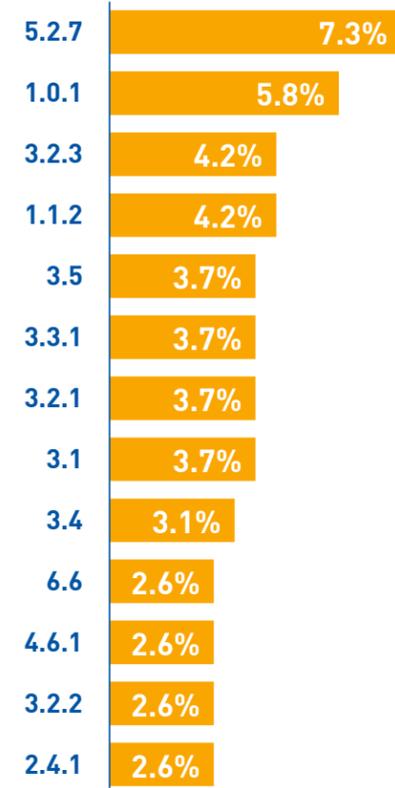
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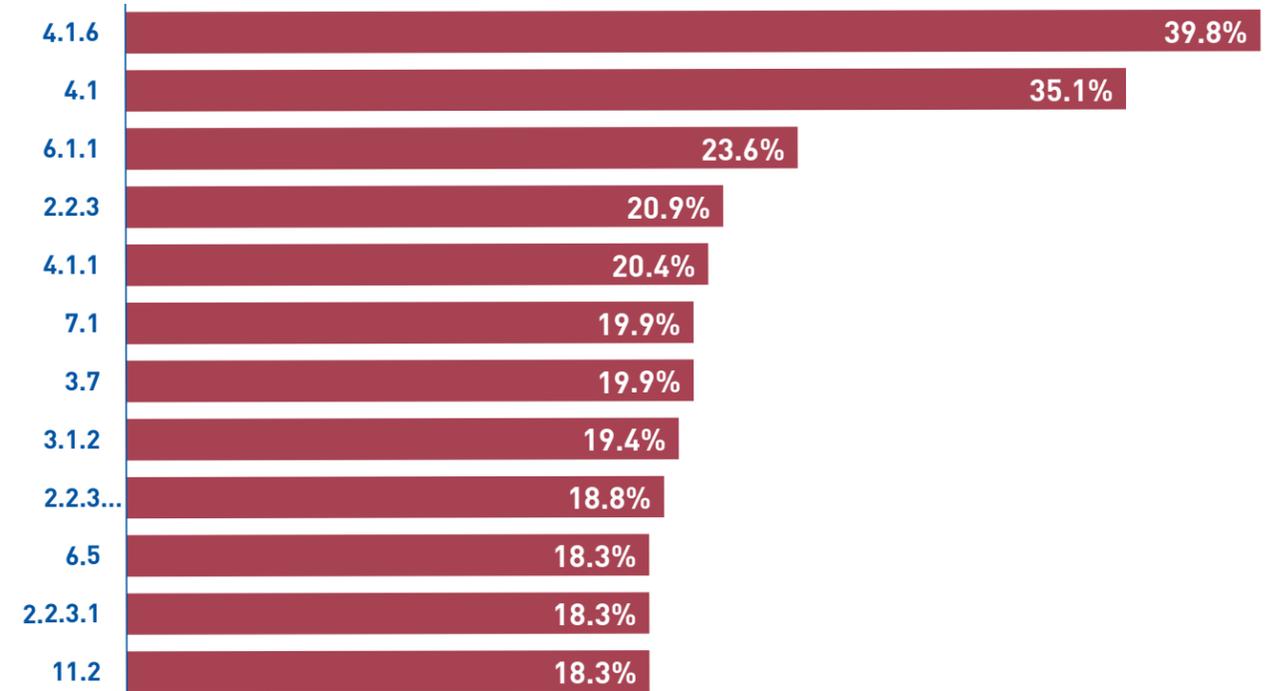
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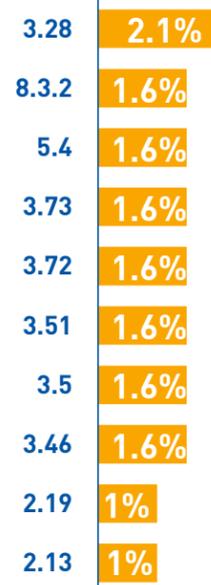
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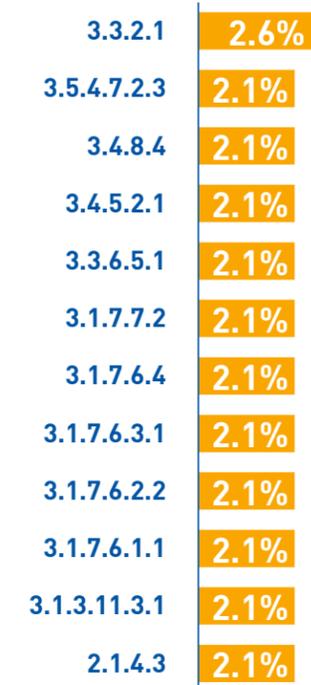
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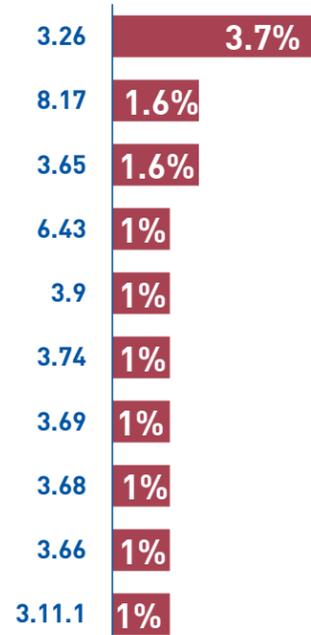
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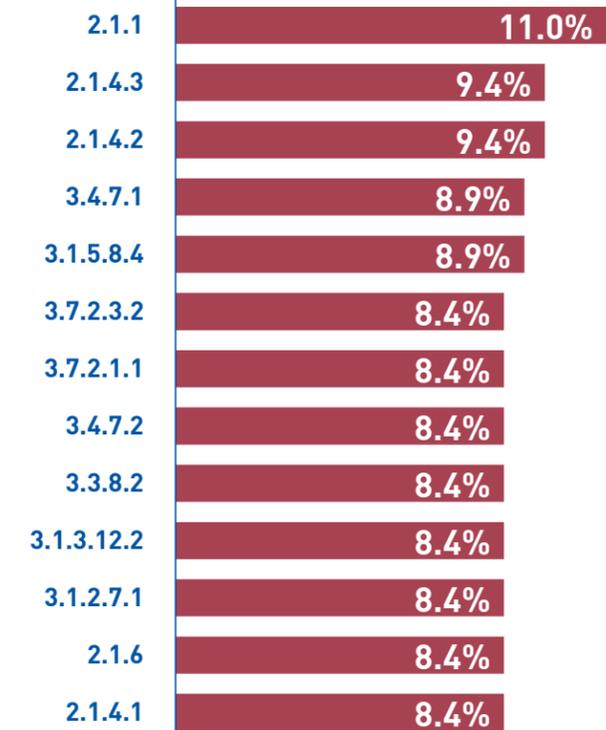
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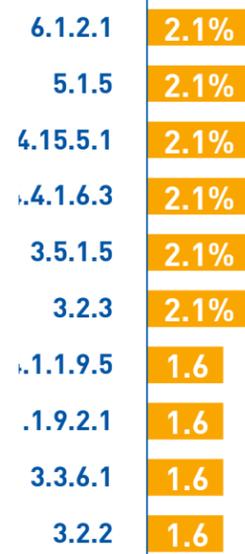
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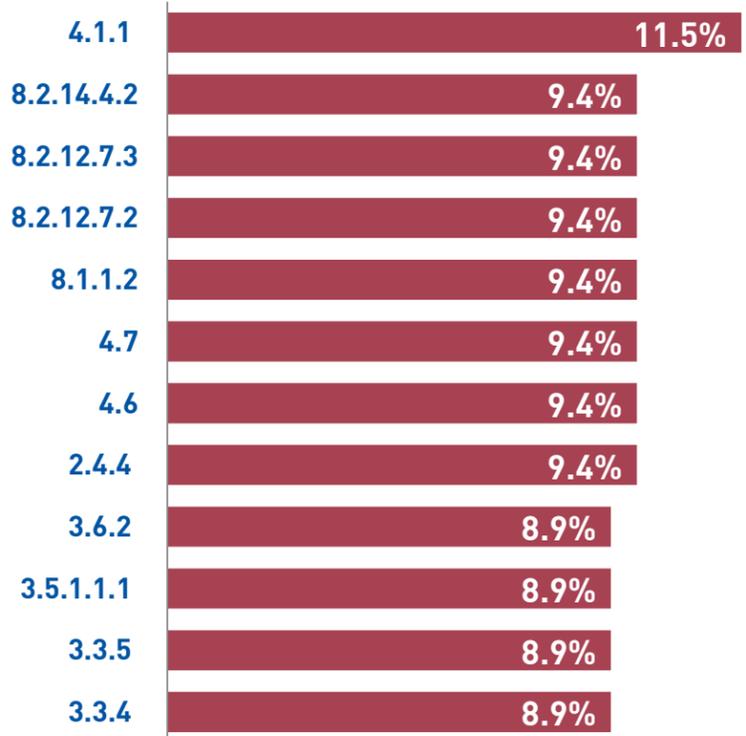
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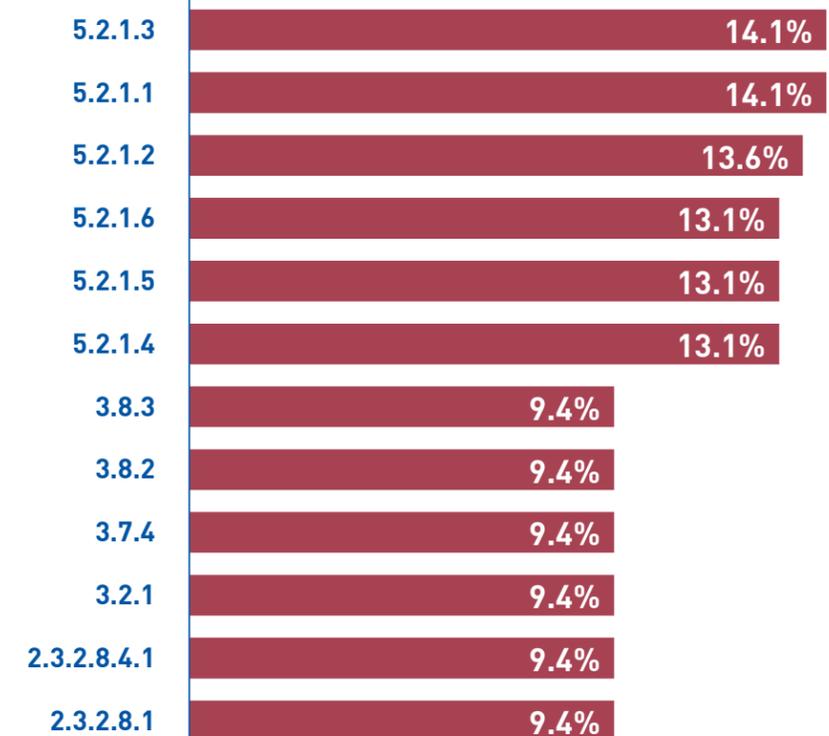
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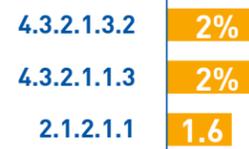
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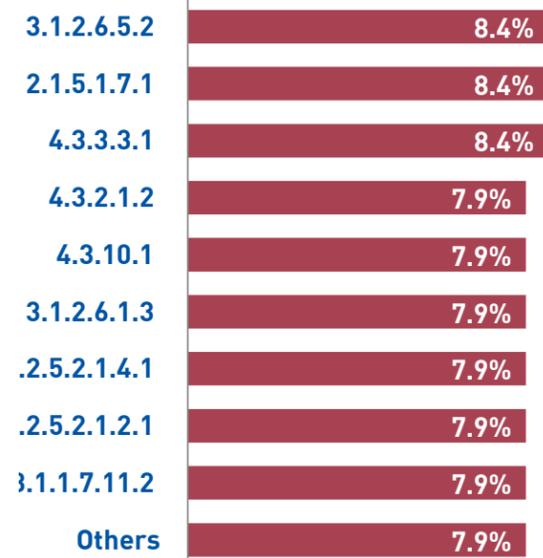
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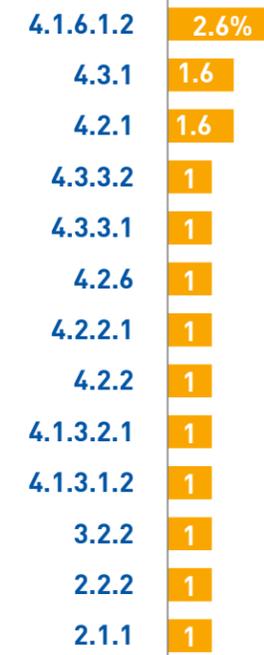
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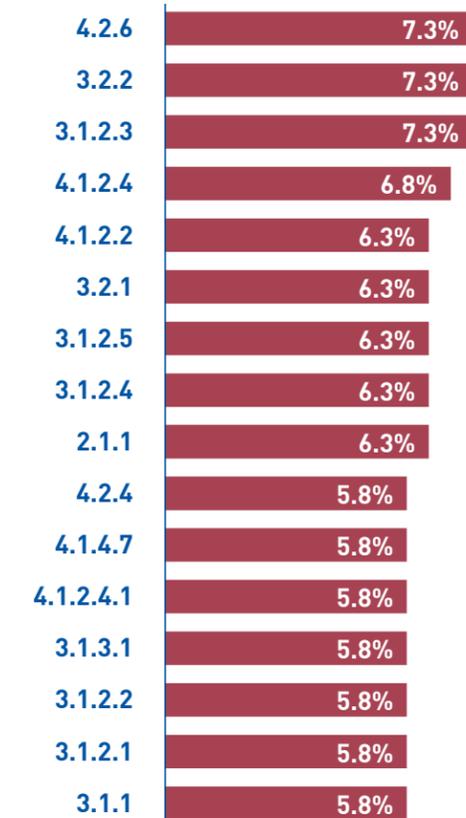
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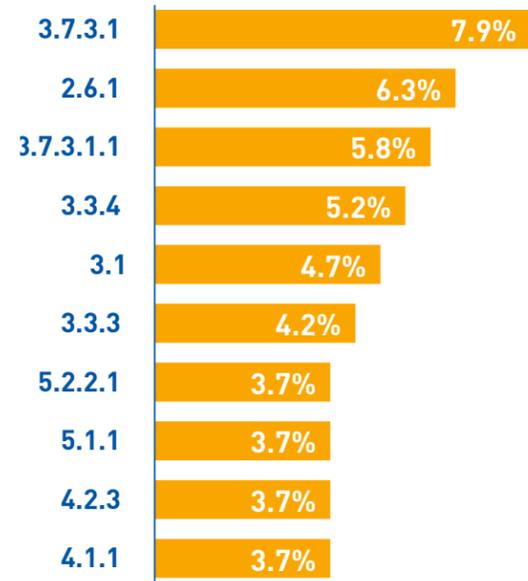
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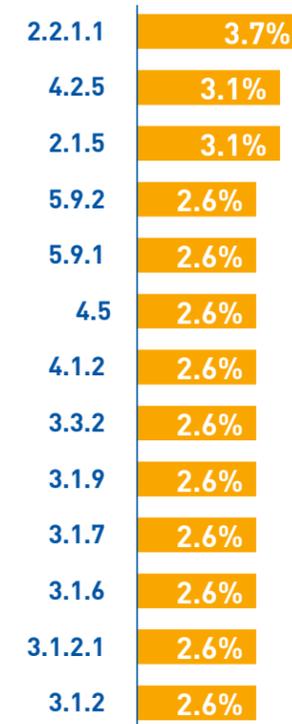
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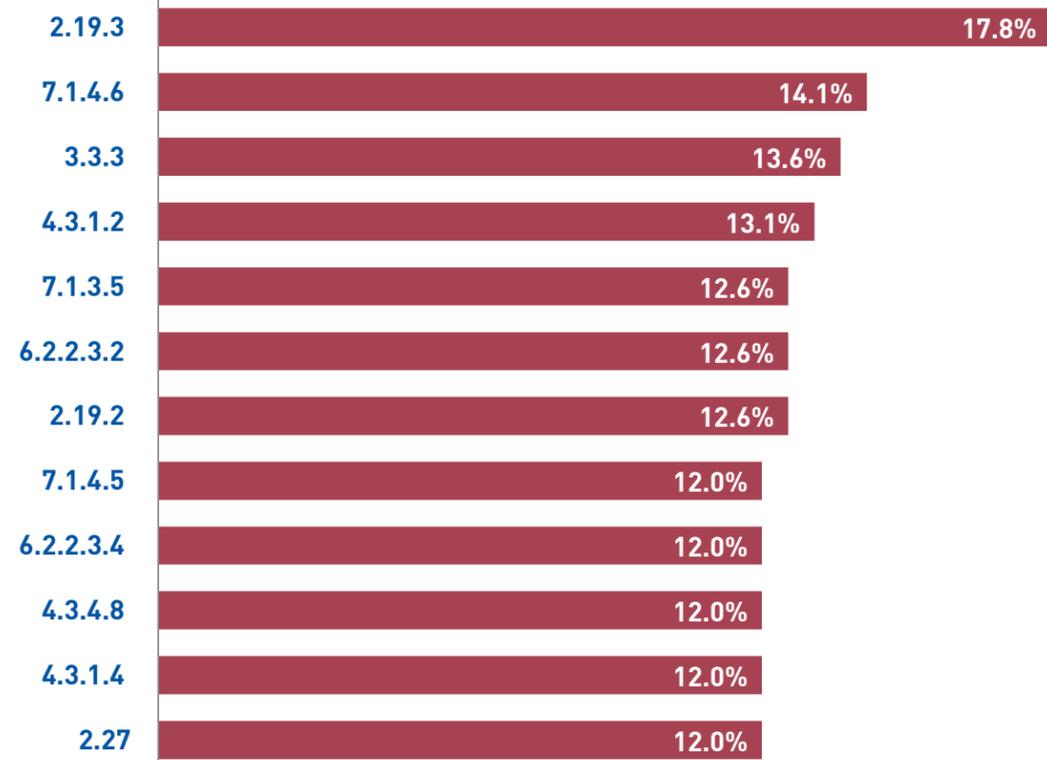
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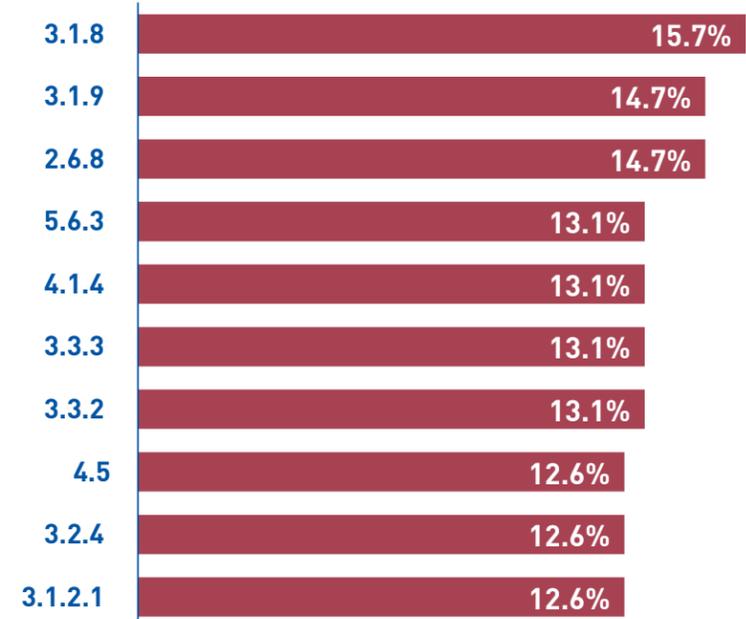
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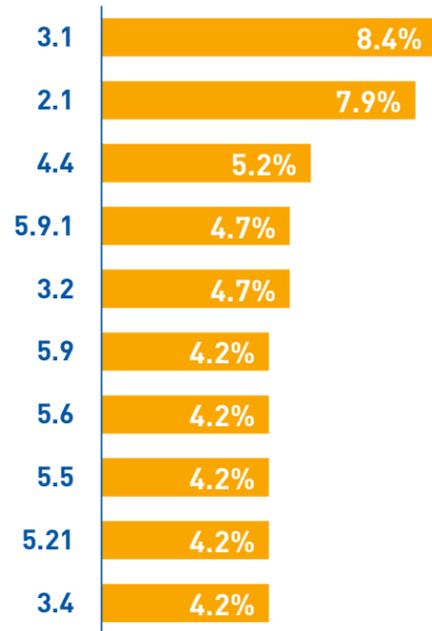
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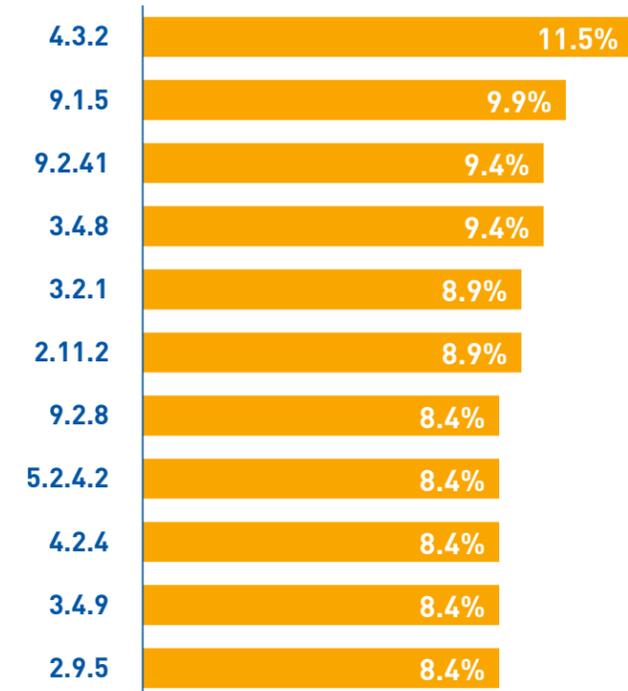
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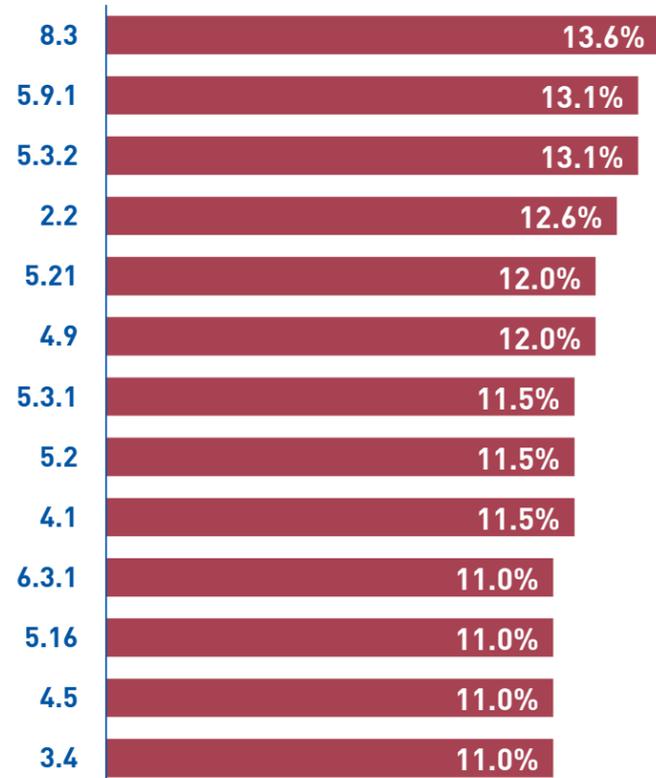
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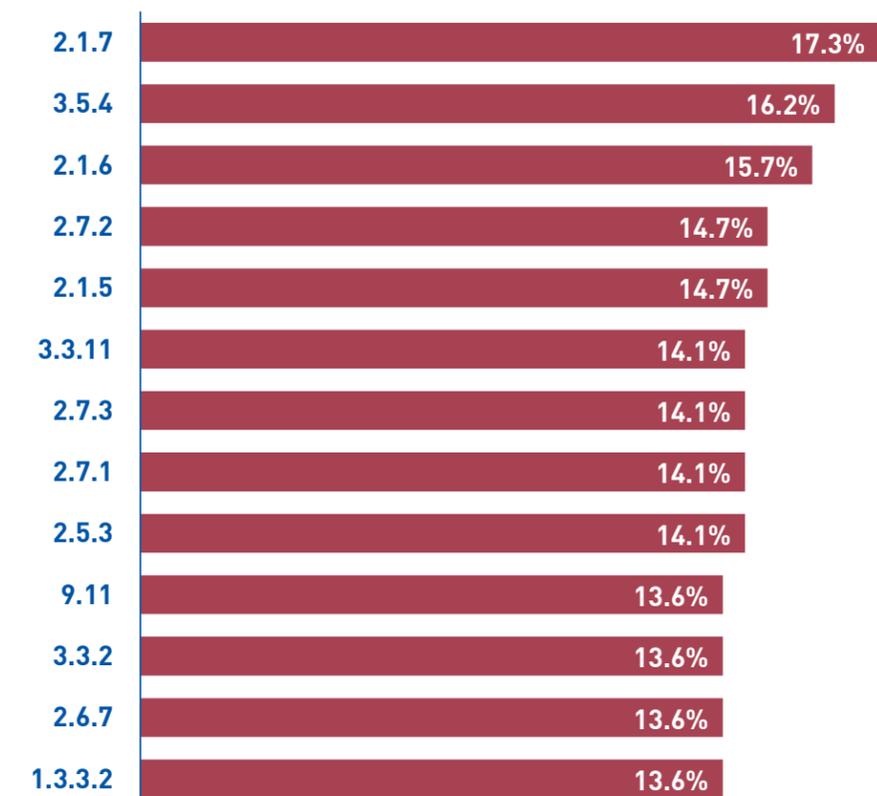
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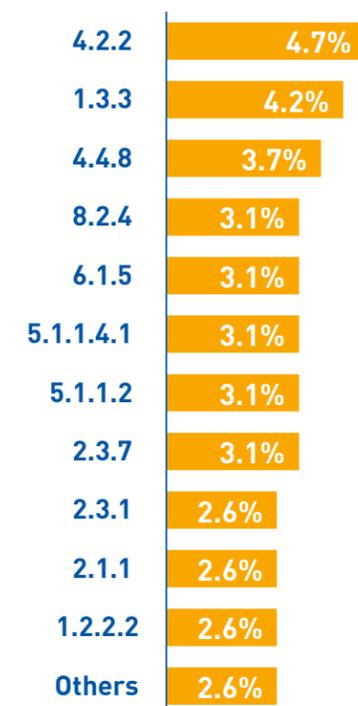
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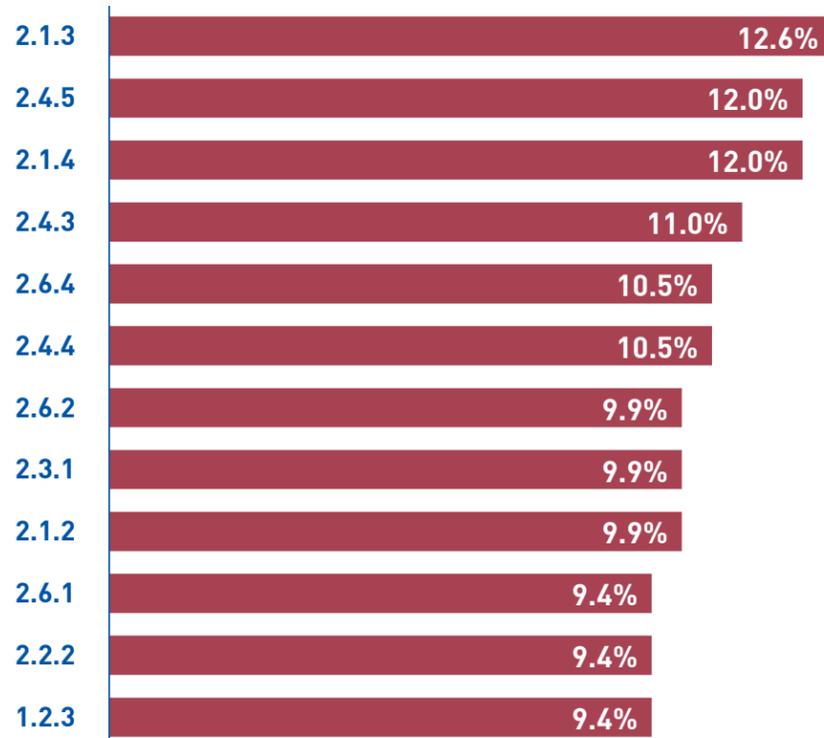
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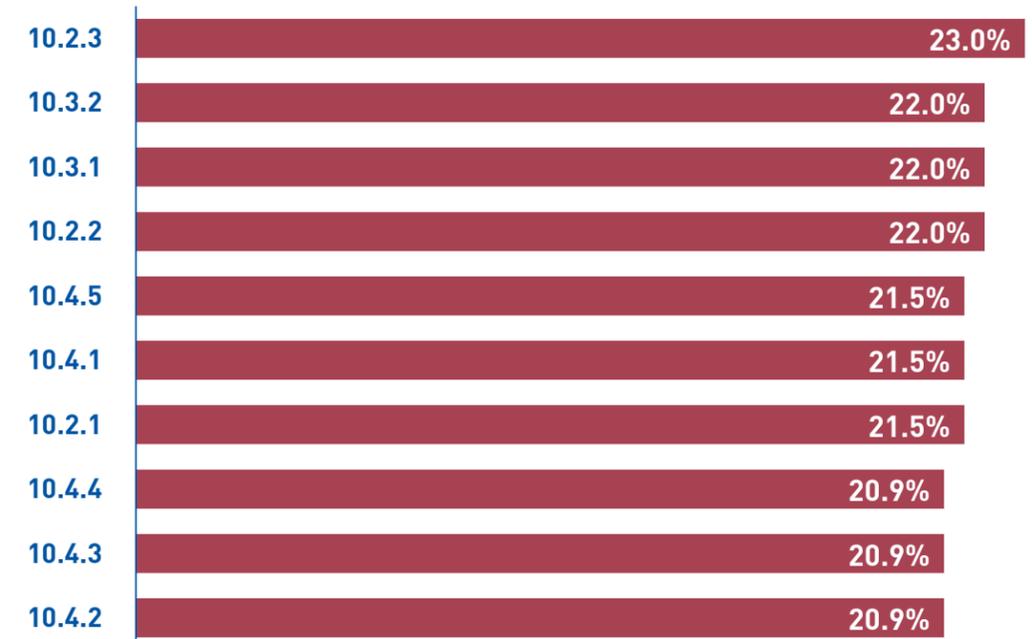
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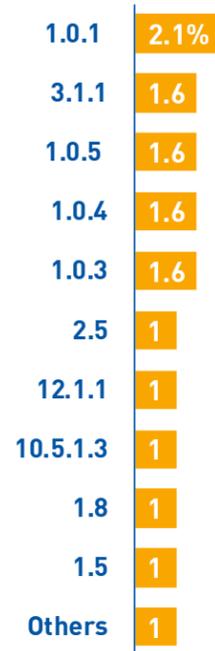
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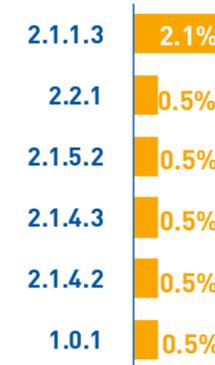
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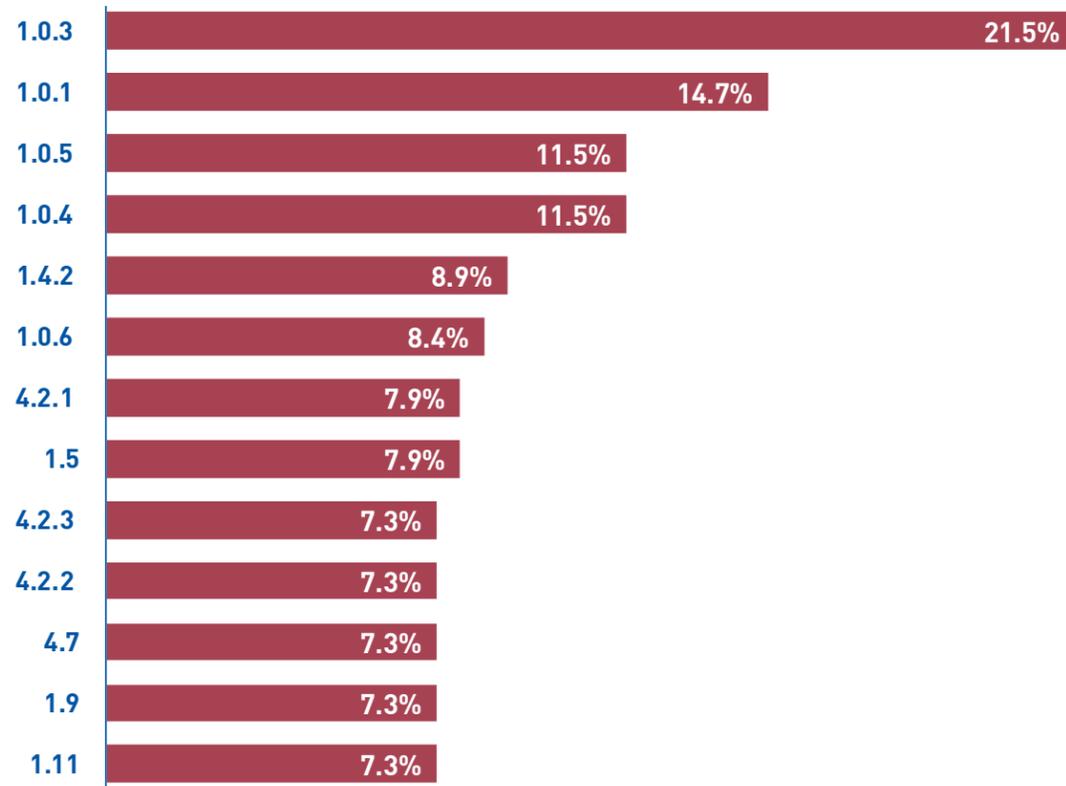
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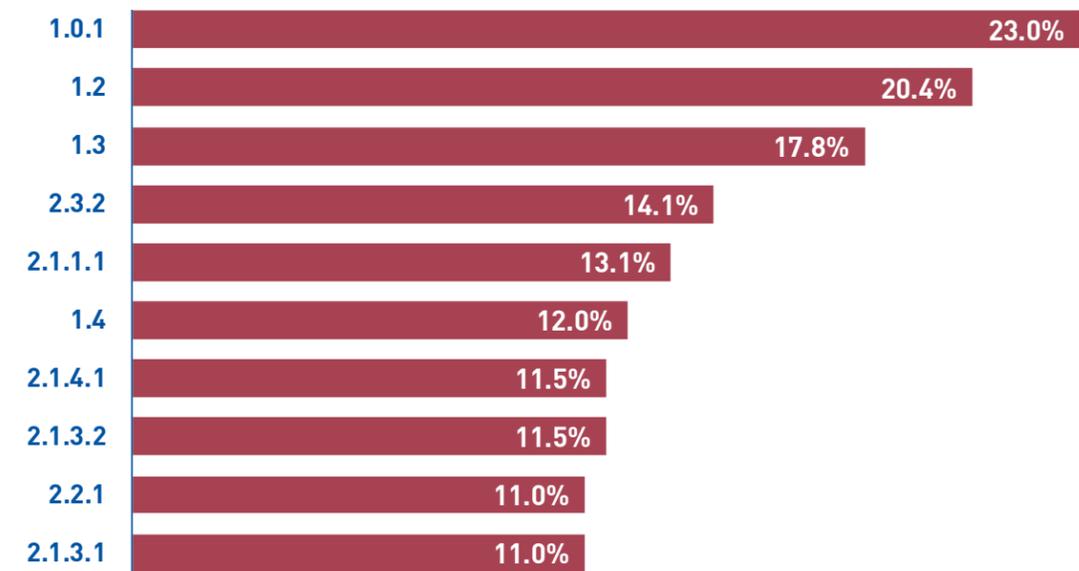
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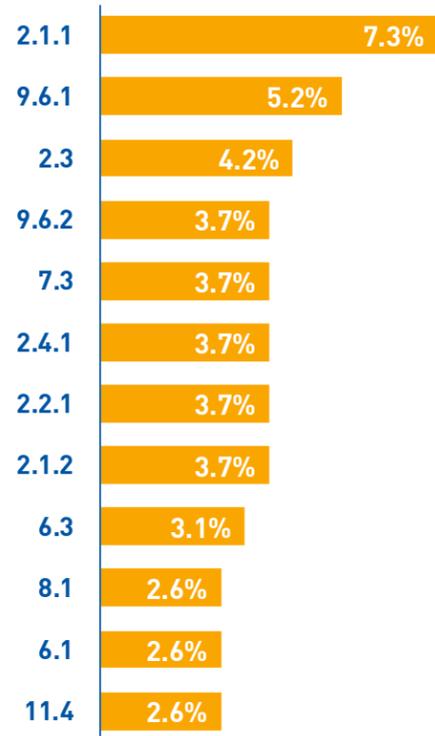
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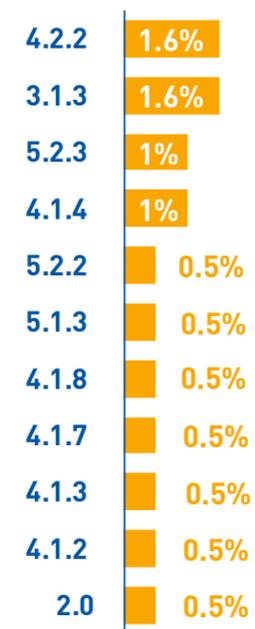
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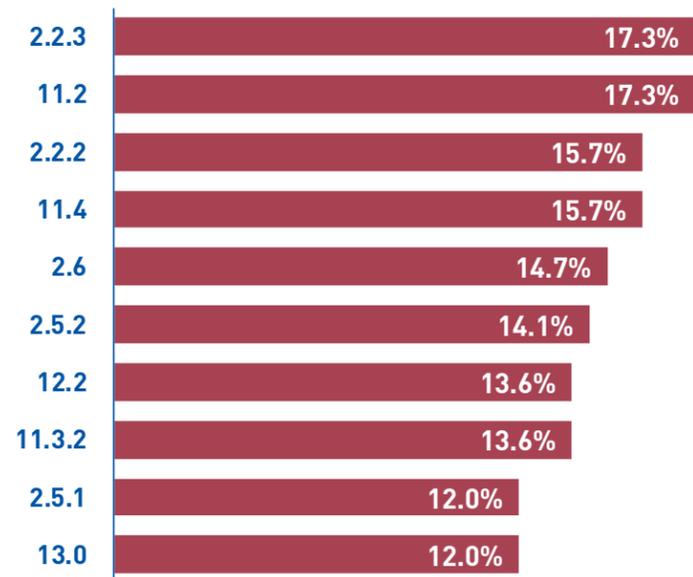
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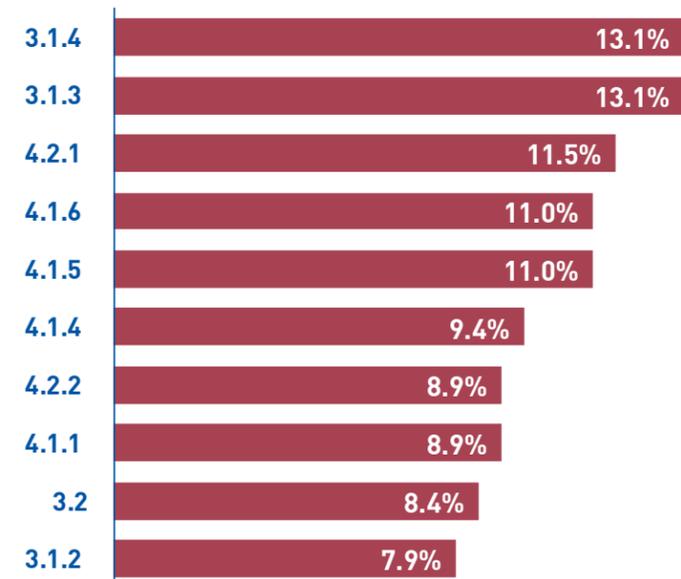
Top Annex 19 provisions reported as “More Exacting”



Top Annex 18 provisions reported as “Less Protective”



Top Annex 19 provisions reported as “Less Protective”



Appendix A

Definitions and Terminology

DEFINITIONS

Audit. A USOAP CMA on-site activity during which ICAO assesses the effective implementation of the critical elements (CEs) of a safety oversight system and conducts a systematic and objective review of a State's safety oversight system to verify the status of a State's compliance with the provisions of the Convention or national regulations and its implementation of ICAO Standards and Recommended Practices (SARPs), procedures and aviation safety best practices.

Audit area. One of eight audit areas pertaining to USOAP, i.e. primary aviation legislation and civil aviation regulations (LEG), civil aviation organization (ORG); personnel licensing and training (PEL); aircraft operations (OPS); airworthiness of aircraft (AIR); aircraft accident and incident investigation (AIG); air navigation services (ANS); and aerodromes and ground aids (AGA).

Compliance checklist (CC). Assists the State in ascertaining the status of implementation of ICAO Standards and Recommended Practices (SARPs) and in identifying any difference that may exist between the national regulations and practices and the relevant provisions in the Annexes to the Convention.

Corrective action plan (CAP). A plan of action to eliminate the cause of a deficiency or finding.

Critical elements (CEs). The critical elements of a safety oversight system encompass the whole spectrum of civil aviation activities. They are the building blocks upon which an effective safety oversight system is based. The level of effective implementation of the CEs is an indication of a State's capability for safety oversight.

Effective implementation (EI). A measure of the State's safety oversight capability, calculated for each critical element, each audit area or as an overall measure. The EI is expressed as a percentage.

Finding. Generated in a USOAP CMA activity as a result of a lack of compliance with Articles of the Convention, ICAO Assembly Resolutions, safety-related provisions in the Annexes to the Convention, Procedures for Air Navigation Services (PANS) or a lack of application of ICAO guidance material or good aviation safety practices.

ICAO Coordinated Validation Mission (ICVM). A USOAP CMA on-site activity during which an ICAO team of subject matter experts collects and assesses evidence provided by the State demonstrating that the State has implemented corrective actions (or mitigating measures for significant safety concerns) to address previously identified findings; ICAO validates the collected evidence and information.

Lack of effective implementation (LEI). A measure of the State's lack of safety oversight capability, calculated for each critical element, each audit area or as an overall measure. The LEI is expressed as a percentage.

Mitigating measure. An immediate action taken to resolve a significant safety concern (SSC).

Objective evidence. Information that can be verified, supporting the existence of a documented system and indicating that the system generates the desired results.

Off-site validation activity. A USOAP CMA activity during which an ICAO team of subject matter experts assesses corrective actions implemented by a State and validates submitted supporting evidence at the ICAO HQ without an on-site visit to the State.

Oversight. The active control of the aviation industry and service providers by the competent regulatory authorities to ensure that the State's international obligations and national requirements are met through the establishment of a system based on the critical elements.

Protocol question (PQ). The primary tool used in USOAP for assessing the level of effective implementation of a State's safety oversight system based on the critical elements, the Convention on International Aviation, ICAO Standards and Recommended Practices (SARPs), Procedures for Air Navigation Services (PANS) and related guidance material.

Protocol question (PQ) finding. Under the USOAP CMA, each finding is generated and expressed in terms of one protocol question (PQ); issuance of a PQ finding changes the status of the related PQ to not satisfactory.

Safety. The state in which risks associated with aviation activities, related to, or in direct support of the operation of aircraft, are reduced and controlled to an acceptable level.

Safety risk. The predicted probability and severity of the consequences or outcomes of a hazard.

Scope. Audit areas and protocol questions (PQs) addressed and covered in a USOAP CMA activity.

Significant safety concern (SSC). Occurs when the State allows the holder of an authorization or approval to exercise the privileges attached to it, although the minimum requirements established by the State and by the Standards set forth in the Annexes to the Convention are not met, resulting in an immediate safety risk to international civil aviation.

Validation. Confirming submitted information in order to determine either the existence of a protocol question (PQ) finding or the progress made in resolving the PQ finding.

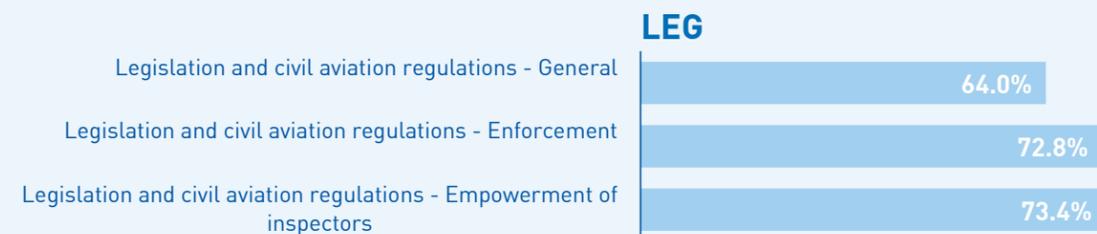
ACRONYMS AND ABBREVIATIONS

AGA	Aerodromes and ground aids
AIG	Aircraft accident and incident investigation
AIR	Airworthiness of aircraft
ANB	Air Navigation Bureau
ANS	Air navigation services
AOC	Air operator certificate
CAA	Civil Aviation Authority
CAP	Corrective action plan
CC	Compliance checklist
CE	Critical element
CMA	Continuous Monitoring Approach
EFOD	Electronic Filing of Differences
EI	Effective implementation
GASP	Global Aviation Safety Plan
iSTARS	Integrated Safety Trend Analysis and Reporting System
ICVM	ICAO Coordinated Validation Mission
LEG	Primary aviation legislation and civil aviation regulations
LEI	Lack of effective implementation
MIR	Mandatory information request
MOU	Memorandum of Understanding
OAS	Safety and Air Navigation Oversight Audit Section
OPS	Aircraft operations
ORG	Civil aviation organization
PANS	Procedures for Air Navigation Services
PEL	Personnel licensing and training
PQ	Protocol Question
RCMC	Regional Continuous Monitoring Coordinator
RO	Regional office
RSOO	Regional safety oversight organization
SAAQ	State aviation activity questionnaire
SARPs	Standards and Recommended Practices
SMS	Safety management system
SSC	Significant safety concern
SSP	State safety programme
USOAP	Universal Safety Oversight Audit Programme

Appendix B

Statistical Data for Subgroups of Each Audit Area

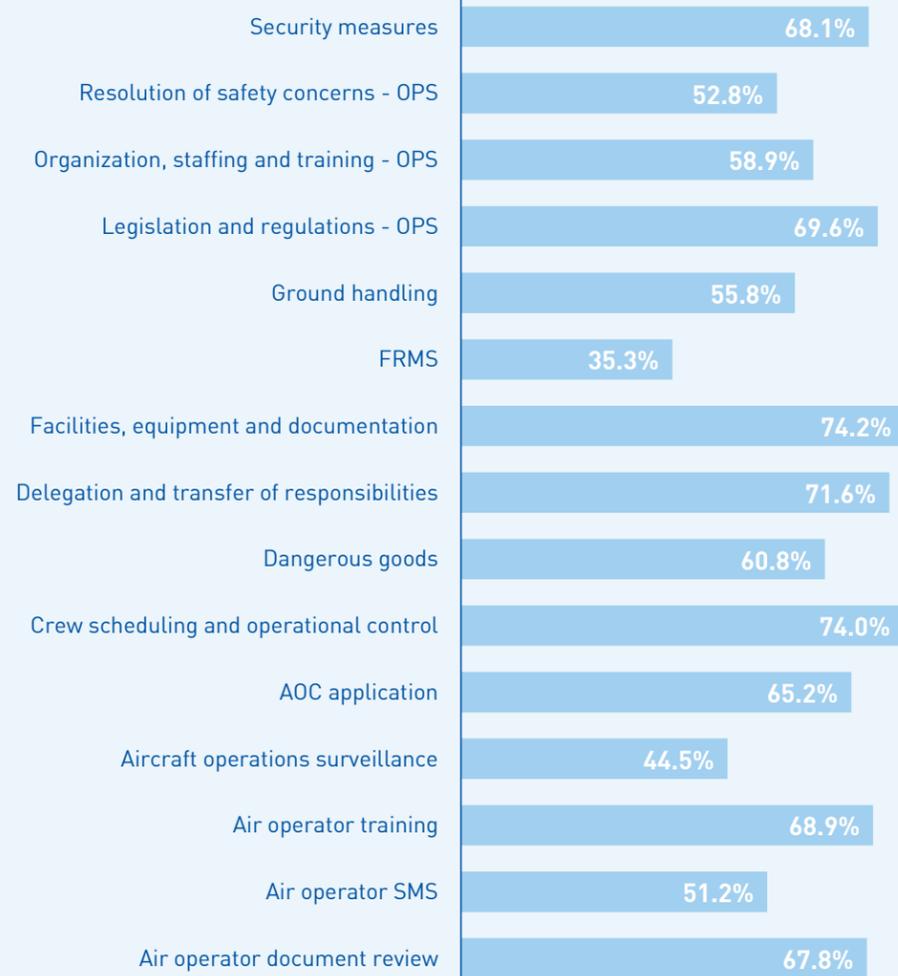
The following graphs depicts Effective Implementation (EI) rates for each subgroup in the eight audit areas.



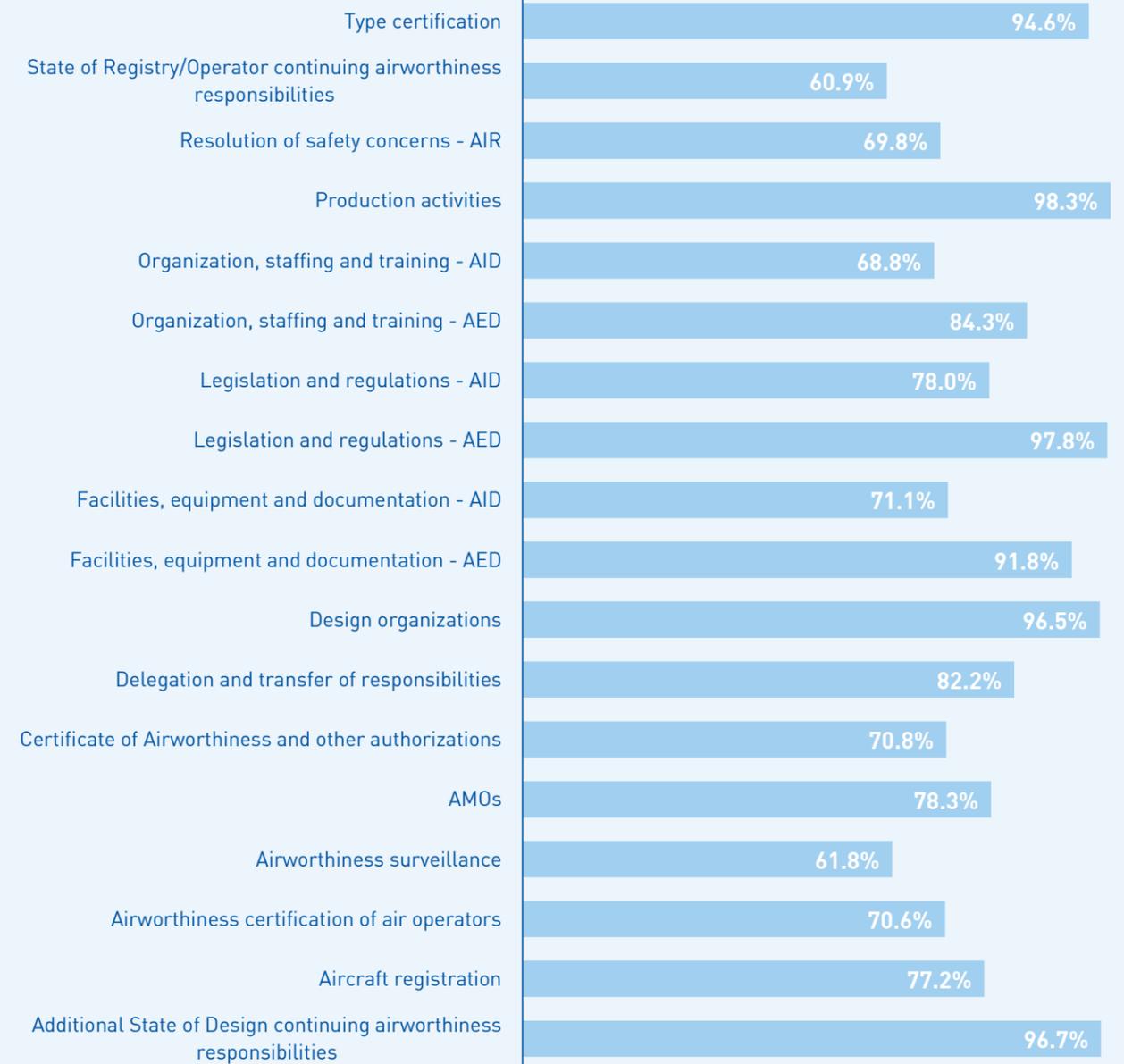
PEL



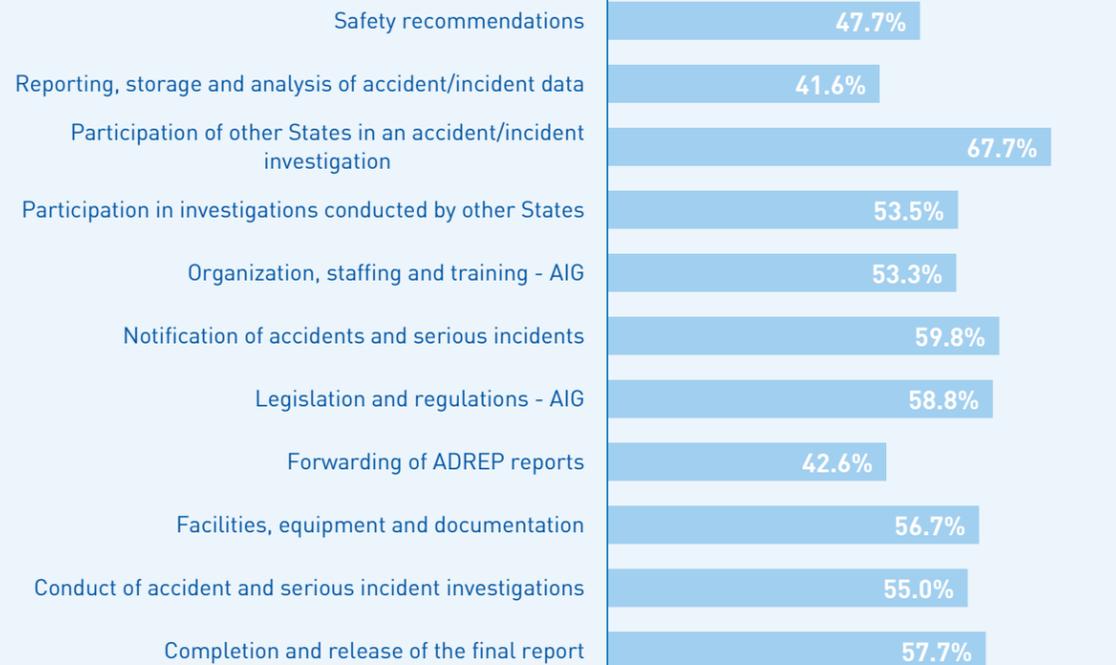
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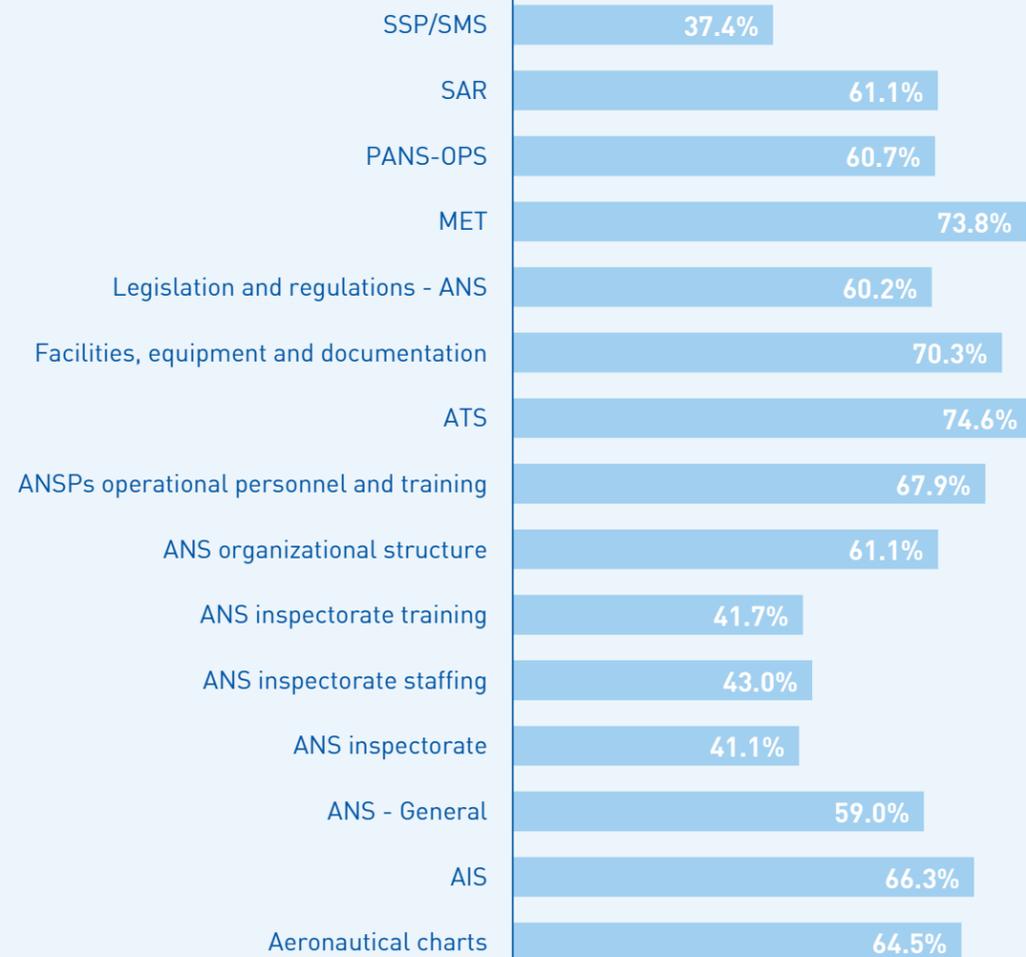
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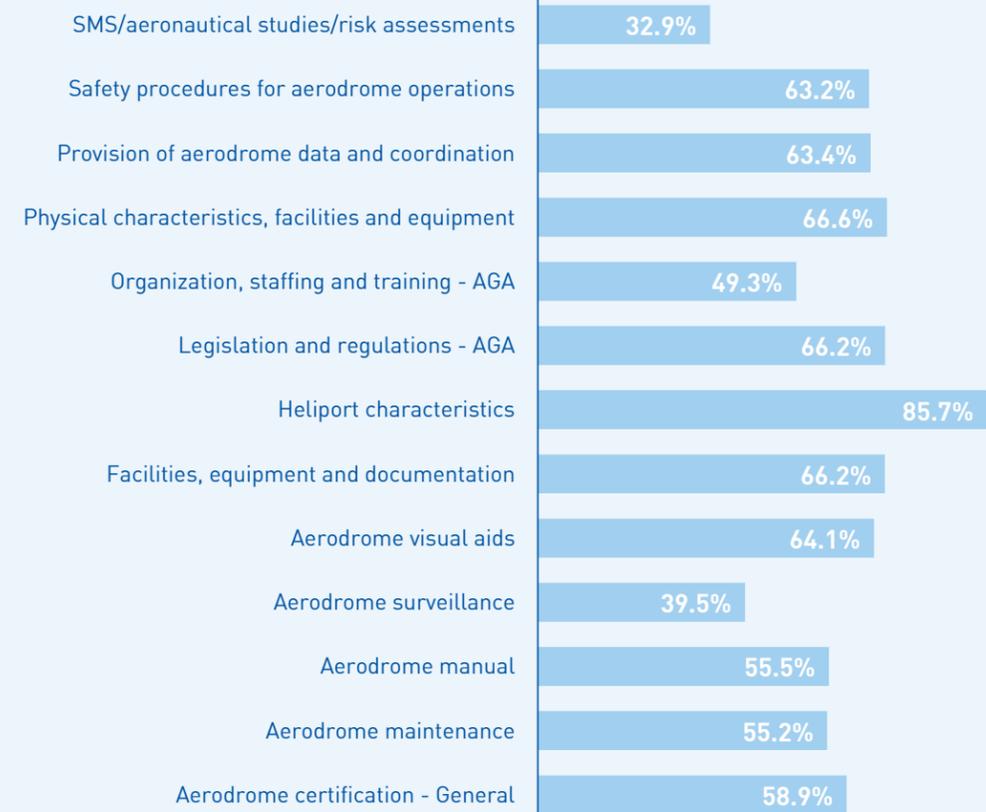
AIG



ANS



AGA



Appendix C

Conducted USOAP CMA Activities

Tables C-1 to C-3 below include information on USOAP CMA activities conducted from 1 January 2013 to 31 December 2015.

APAC: Asia and Pacific Office

ESAF: Eastern and Southern African Office

EUR/NAT: European and North Atlantic Office

MID: Middle East Office

NACC: North American, Central American and Caribbean Office

SAM: South American Office

WACAF: Western and Central African Office

Table C-1. USOAP CMA activities conducted in 2013

No.	State	ICAO Region	USOAP CMA Activity	Dates
1	Argentina	SAM	ICVM	20 to 27 March 2013
2	Bahamas	NACC	ICVM	11 to 17 December 2013
3	Bahrain	MID	ICVM	18 to 24 February 2013
4	Barbados	NACC	ICVM	16 to 22 April 2013
5	Belgium	EUR/NAT	ICVM	31 July to 6 August 2013
6	Bolivia	SAM	Audit	14 to 23 October 2013
7	Botswana	ESAF	ICVM	3 to 9 April 2013
8	Burundi	ESAF	Audit	18 to 26 November 2013
9	Cameroon	WACAF	ICVM	4 to 11 December 2013
10	Cook Islands	APAC	Audit	15 to 27 August 2013
11	Democratic Republic of the Congo	WACAF	ICVM	15 to 23 January 2013
12	Georgia	EUR/NAT	Audit	21 to 29 October 2013
13	Greece	EUR/NAT	Audit	15 to 24 April 2013
14	India	APAC	ICVM	19 to 23 August 2013
15	Jamaica	NACC	ICVM	8 to 9 January 2013
16	Jordan	MID	Audit	10 to 19 November 2013
17	Kenya	ESAF	ICVM	8 to 14 May 2013
18	Mauritania	WACAF	Off-site validation	September 13
19	Myanmar	APAC	ICVM	6 to 12 November 2013

Table C-1. USOAP CMA activities conducted in 2013 - continued

No.	State	ICAO Region	USOAP CMA Activity	Dates
20	Nepal	APAC	ICVM	10 to 16 July 2013
21	Organization of Eastern Caribbean States (OECS)*	NACC	ICVM	20 to 26 February 2013
22	Oman	MID	ICVM	11 to 17 March 2013
23	Papua New Guinea	APAC	ICVM	5 to 12 August 2013
24	Philippines	APAC	Audit	18 to 22 February 2013
25	Qatar	MID	ICVM	31 March to 7 April 2013
26	South Africa	ESAF	ICVM	24 to 30 July 2013
27	Turkey	EUR/NAT	ICVM	4 to 10 June 2013
28	United Republic of Tanzania	ESAF	Audit	6 to 15 May 2013
29	Venezuela	SAM	ICVM	22 to 28 May 2013

* Antigua and Barbuda; Grenada; Saint Kitts and Nevis; Saint Lucia; and Saint Vincent and the Grenadines.

Table C-2. USOAP CMA activities conducted in 2014

No.	State	ICAO Region	USOAP CMA Activity	Dates
1	Albania	EUR/NAT	Off-site validation	Apr-14
2	Belize	NACC	ICVM	5 to 11 February 2014
3	Benin	WACAF	Off-site validation	Nov-14
4	Burkina Faso	WACAF	Off-site validation	May-14
5	Cambodia	APAC	Off-site validation	May-14
6	Côte d'Ivoire	WACAF	Off-site validation	Jan-14
7	Côte d'Ivoire	WACAF	ICVM	18 to 24 March 2014
8	Côte d'Ivoire	WACAF	Off-site validation	Dec-14
9	Egypt	MID	Audit	23 November to 4 December 2014
10	Guatemala	NACC	Off-site validation	Apr-14
11	Guinea	WACAF	Off-site validation	Sep-14
12	Indonesia	APAC	Audit	5 to 14 May 2014
13	Israel	EUR/NAT	ICVM	25 to 31 March 2014
14	Kazakhstan	EUR/NAT	ICVM	27 May to 4 June 2014
15	Madagascar	ESAF	Off-site validation	Apr-14
16	Maldives	APAC	ICVM	16 to 22 June 2014
17	Mali	WACAF	Off-site validation	Nov-14
18	Mauritania	WACAF	ICVM	30 June to 4 July 2014
19	Morocco	EUR/NAT	ICVM	8 to 15 October 2014
20	Mozambique	ESAF	ICVM	26 November to 3 December 2014
21	Namibia	ESAF	ICVM	16 to 22 July 2014
22	Peru	SAM	Audit	13 to 23 October 2014
23	Portugal	EUR/NAT	Off-site validation	Oct-14
24	Republic of Moldova	EUR/NAT	ICVM	18 to 24 February 2014
25	Russian Federation	EUR/NAT	Audit	10 to 21 November 2014
26	Saudi Arabia	MID	ICVM	27 April to 4 May 2014
27	Senegal	WACAF	Off-site validation	May-14
28	Seychelles	ESAF	Audit	4 to 13 August 2014
29	Sierra Leone	WACAF	ICVM	29 January to 5 February 2014

Table C-2. USOAP CMA activities conducted in 2014 - continued

No.	State	ICAO Region	USOAP CMA Activity	Dates
30	Sudan	MID	Off-site validation	Oct-14
31	Uganda	ESAF	ICVM	11 to 17 June 2014
32	United Arab Emirates	MID	ICVM	27 October to 2 November 2014
33	Uruguay	SAM	ICVM	2 to 8 April 2014

Table C-3. USOAP CMA activities conducted in 2015

No.	State	ICAO Region	USOAP CMA Activity	Dates
1	Armenia	EUR/NAT	Audit	15 to 25 June 2015
2	Austria	EUR/NAT	ICVM	15 to 21 July 2015
3	Azerbaijan	EUR/NAT	Audit	24 August to 2 September 2015
4	Bahamas	NACC	ICVM	9 to 15 December 2015
5	Belarus	EUR/NAT	ICVM	15 to 21 September 2015
6	Benin	WACAF	Off-site validation	April 2015
7	Benin	WACAF	Off-site validation	September 2015
8	Botswana	ESAF	ICVM	9 to 16 December 2015
9	Brazil	SAM	Off-site validation	February 2015
10	Brazil	SAM	ICVM	9 to 13 November 2015
11	Cameroon	WACAF	Off-site validation	October 2015
12	Chad	WACAF	ICVM	25 to 31 March 2015
13	Chad	WACAF	Off-site validation	April 2015
14	China	APAC	Off-site validation	November 2015
15	Congo	WACAF	ICVM	5 to 12 May 2015
16	Congo	WACAF	Off-site validation	May 2015
17	Ecuador	SAM	ICVM	23 to 30 September 2015
18	El Salvador	NACC	ICVM	30 September to 6 October 2015
19	Equatorial Guinea	WACAF	ICVM	1 to 8 September 2015
20	Ethiopia	ESAF	Audit	11 to 20 May 2015
21	Finland	EUR/NAT	Off-site validation	June 2015
22	France	EUR/NAT	Off-site validation	In progress
23	Germany	EUR/NAT	Off-site validation	In progress
24	Guatemala	NACC	Audit	16 to 26 November 2015
25	Hungary	EUR/NAT	Off-site validation	In progress
26	India	APAC	Audit	30 November to 14 December 2015
27	Ireland	EUR/NAT	Off-site validation	January 2015
28	Israel	EUR/NAT	Off-site validation	July 2015
29	Italy	EUR/NAT	Off-site validation	September 2015
30	Kyrgyzstan	EUR/NAT	Off-site validation (SSC)	July 2015
31	Lao People's Democratic Republic	APAC	ICVM	21 to 27 April 2015
32	Latvia	EUR/NAT	Off-site validation	September 2015
33	Latvia	EUR/NAT	ICVM	3 to 10 November 2015

Table C-3. USOAP CMA activities conducted in 2015 - continued

No.	State	ICAO Region	USOAP CMA Activity	Dates
34	Lithuania	EUR/NAT	Off-site validation	May 2015
35	Madagascar	ESAF	Off-site validation	December 2015
36	Mali	WACAF	ICVM	16 to 22 December 2015
37	Mauritius	ESAF	ICVM	22 to 29 July 2015
38	Niger	WACAF	Off-site validation	February 2015
39	Niger	WACAF	ICVM	8 to 14 December 2015
40	Norway	EUR/NAT	Audit	16 to 20 November 2015
41	Panama	SAM	Audit	24 August to 3 September 2015
42	Russian Federation	EUR/NAT	Audit	19 to 30 October 2015
43	San Marino	EUR/NAT	Audit	29 June to 6 July 2015
44	Swaziland	ESAF	ICVM	8 to 14 April 2015
45	Switzerland	EUR/NAT	ICVM	19 to 23 October 2015
46	Tajikistan	EUR/NAT	ICVM	26 to 31 January 2015
47	Thailand	APAC	Audit	19 to 30 January 2015
48	Togo	WACAF	Off-site validation	September 2015
49	United Arab Emirates	MID	Off-site validation	January 2015



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