

# 2010 USAF Dental Laboratory Equipment/Product Survey

(Project 10-005)

## June 2011

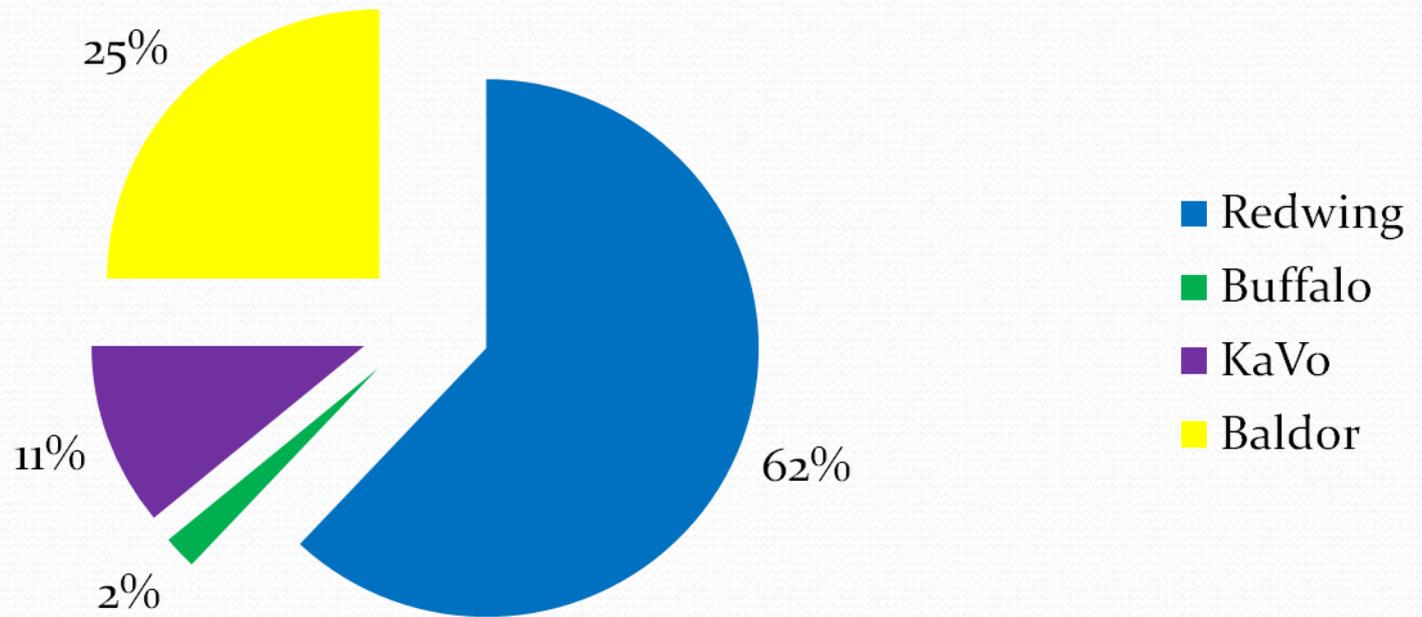


## **Bench Lathe**

Bench lathes are used in the dental lab for bulk grinding of acrylic and stone. Our survey revealed the majority of USAF labs 62% have a Redwing bench lathe manufactured by Handler. Other bench lathes in use are Baldor 25%, KaVo 11% and Buffalo 2%. Some participants commented that they rarely use their bench lathe. Redwing received a number of positive comments for reliability and durability; negative comments referred to the clutch as a weak point.

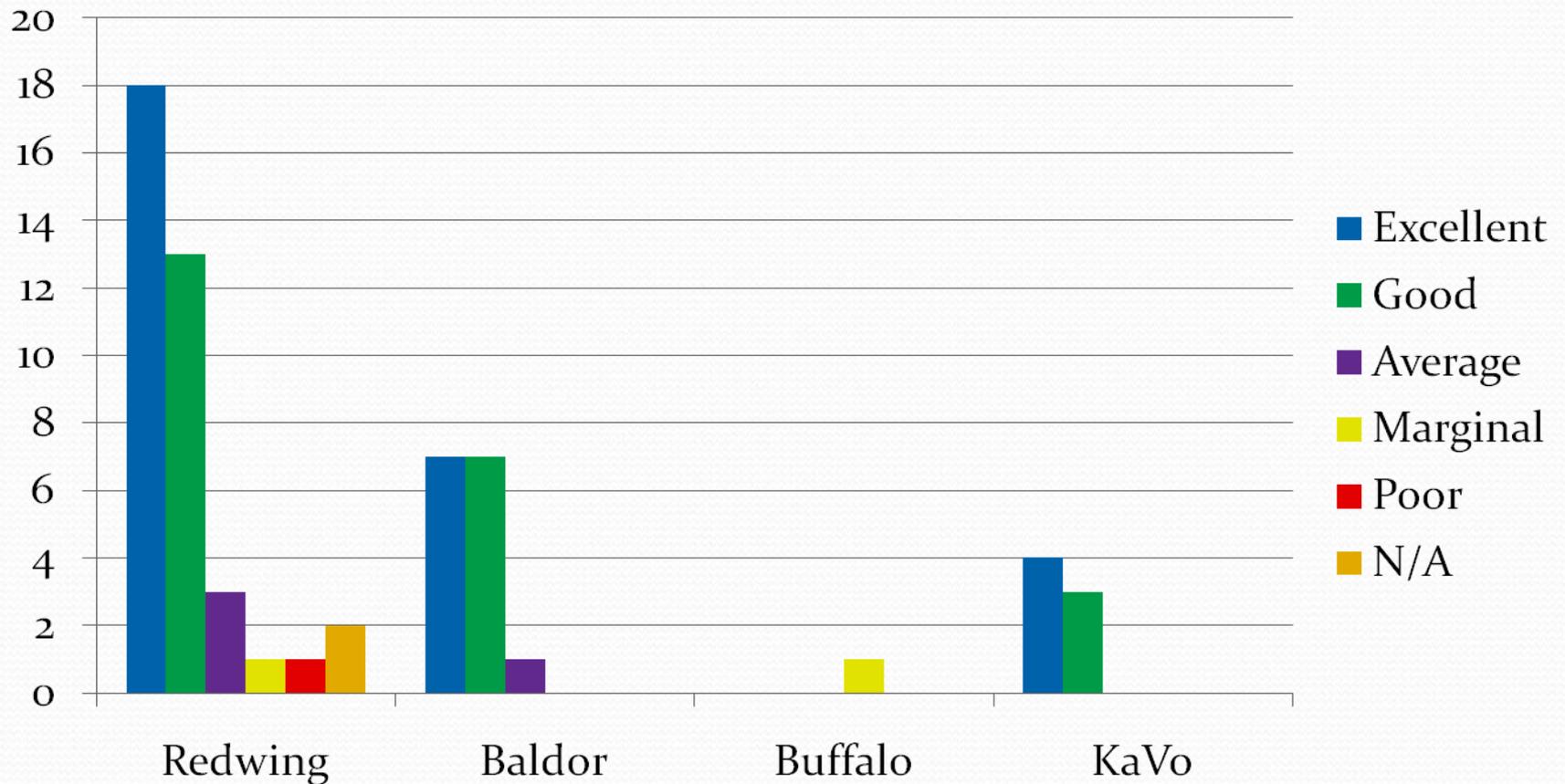
# Market Share by Company

## Bench Lathe



# User Satisfaction

## Bench Lathe

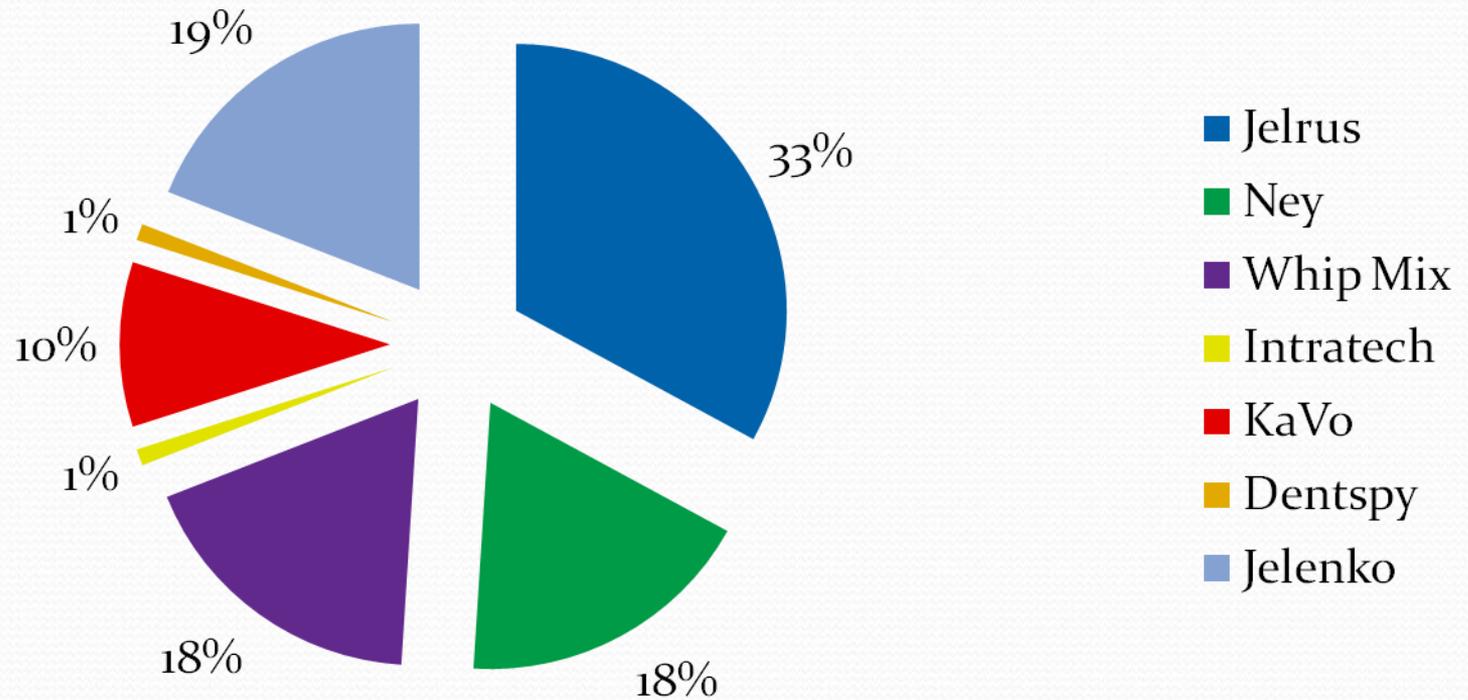


## **Burnout Oven**

Burnout ovens are used for wax elimination, preheating, and heat treatment. An accurate pyrometer, a method of controlling the rate of temperature rise, and a means of maintaining a constant temperature is a must. This survey revealed Jelrus 33% was the most popular burnout oven used in USAF dental laboratories. Other popular companies include Jelenko 19%, Ney 18%, Whip Mix 18%, KaVo 10%, Dentsply 1% and Intratech 1%. Positive comments regarding the Jelrus burnout oven referred to its reliability. One survey participant noted that “the Ney platform foot pedal could be more responsive, otherwise a great oven”.

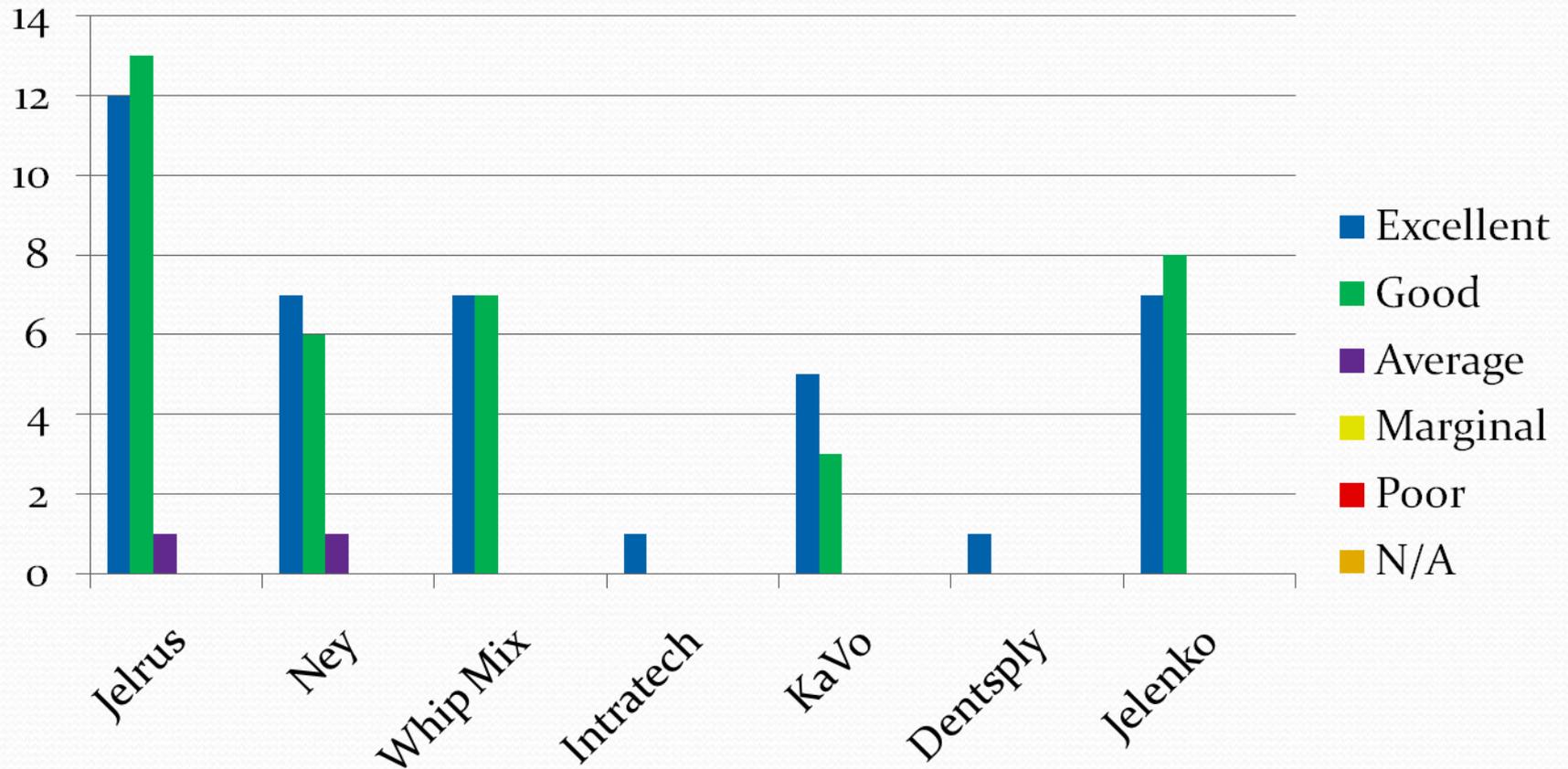
# Market Share by Company

## Burnout Oven



# User Satisfaction

## Burnout Oven

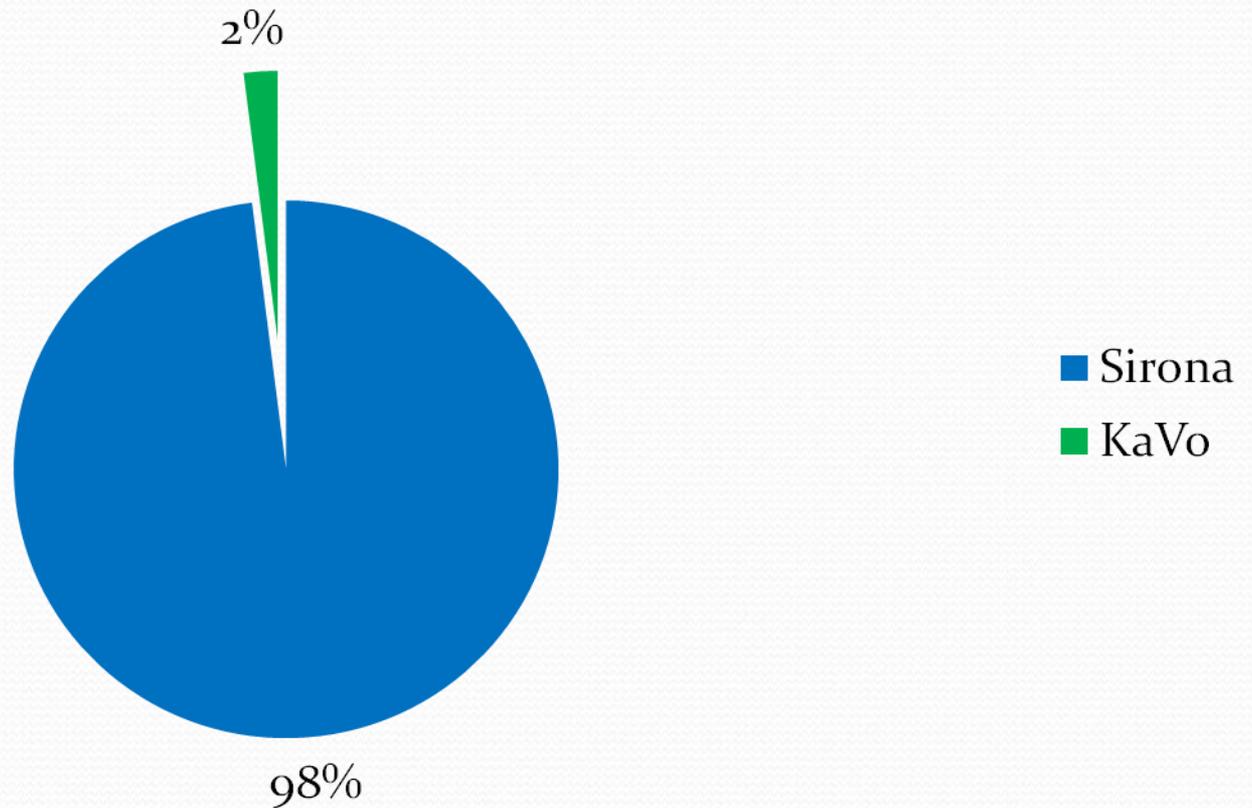


## **CAD/CAM System (laboratory)**

Dental CAD/CAM technology is gaining popularity, mainly due to its benefits of time and materials savings along with accuracy and esthetics of the restorations. There are numerous manufacturers of dental CAD/CAM systems available today. Dental CAD/CAM systems vary in fabrication material used, restorative indications, scanning device features, number of milling axes, size and speed. Our survey revealed that the majority of labs have a CAD/CAM system manufactured by Sirona 98%. One lab reported using a KaVo system 2% for their milling needs. Many labs reported rarely using their CAD/CAM system in the past year. No positive or negative comments were provided.

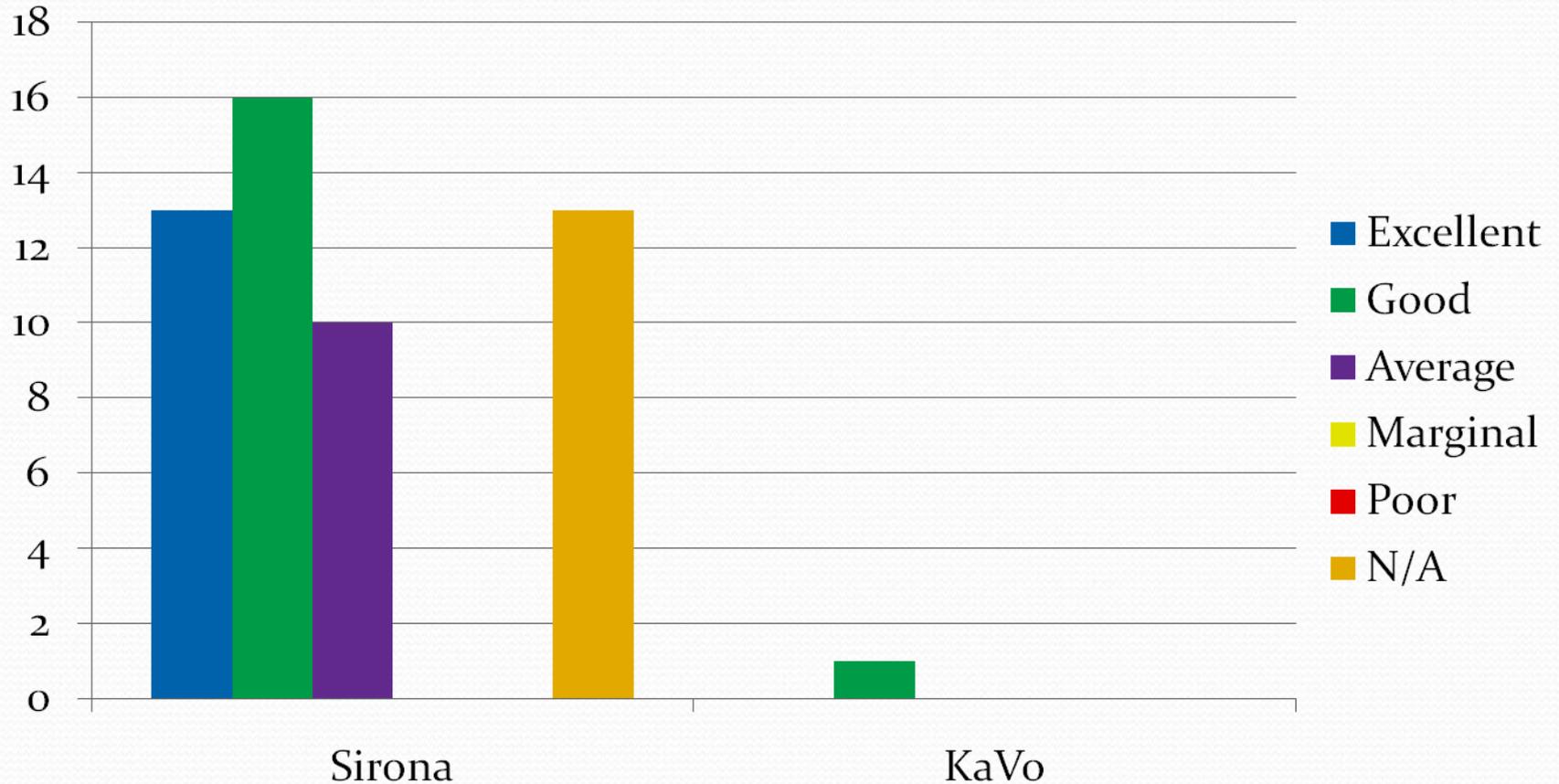
# Market Share by Company

## CAD/CAM Systems (laboratory)



# User Satisfaction

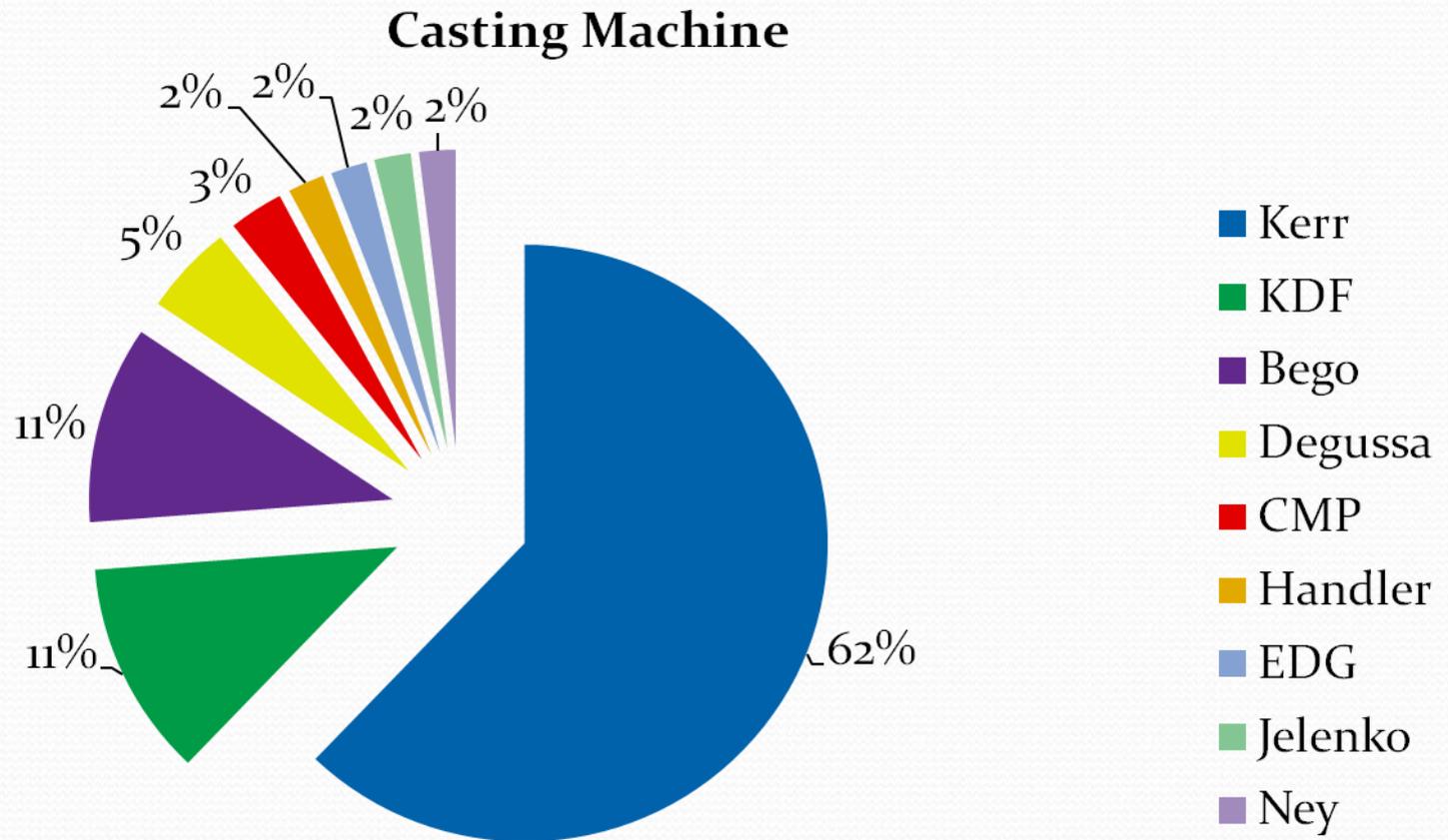
## CAD/CAM Systems (laboratory)



## **Casting Machine**

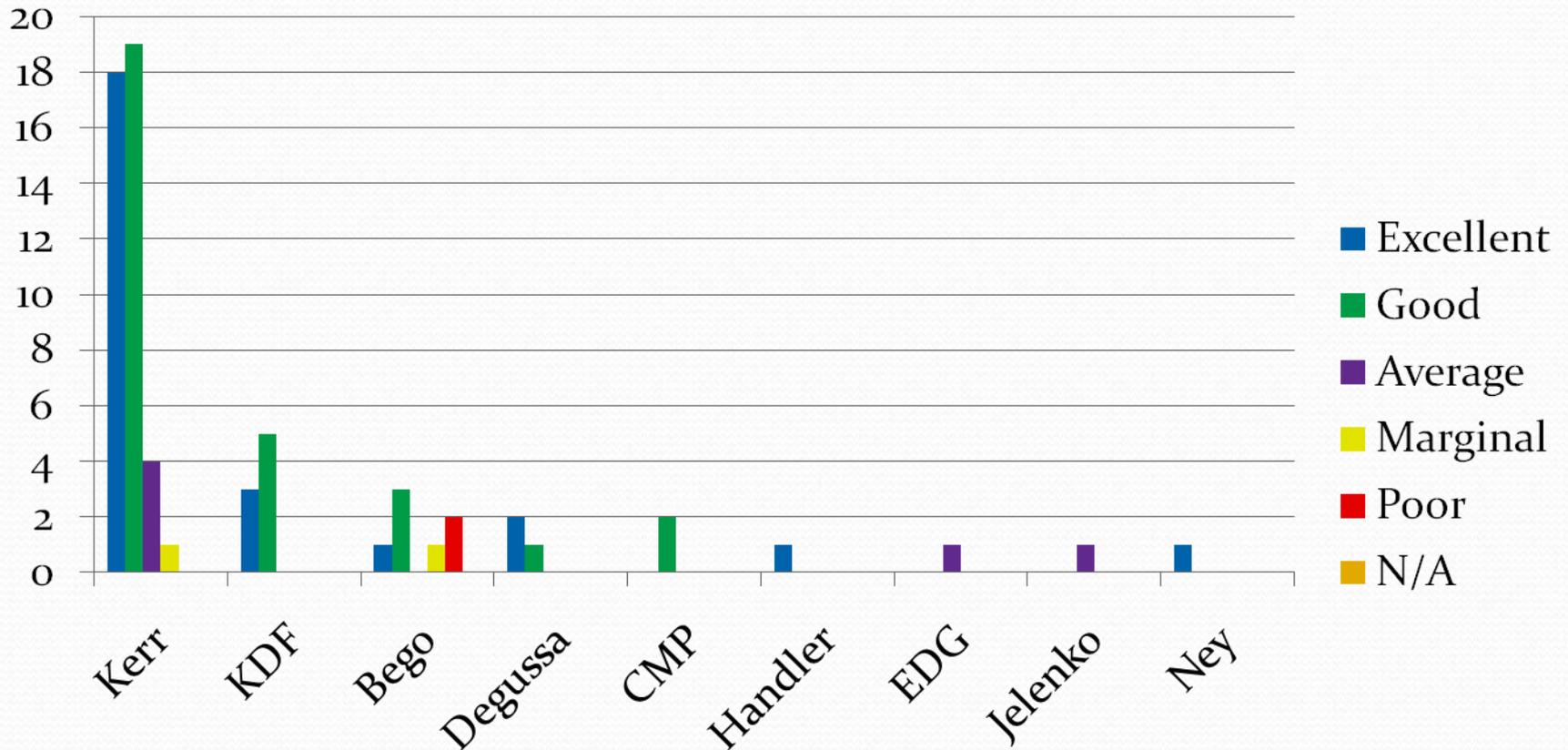
Casting machines are designed to produce metal alloy castings that are dense and porosity free. Our survey revealed that most of the labs continue to use the traditional broken arm casting machine manufactured by Kerr 64%. The next most common models in USAF dental facilities are KDF 12%, Bego 11%, Degussa 5%, CMP 3%, Handler 2%, EDG 2%, Jelenko 2% and Ney 2%. The Kerr broken arm casting machine received positive comments for its great performance and reliability without any negative comments being noted. Bego received negative comments regarding miscasts, low visibility and excess scrap metal after casting.

# Market Share by Company



# User Satisfaction

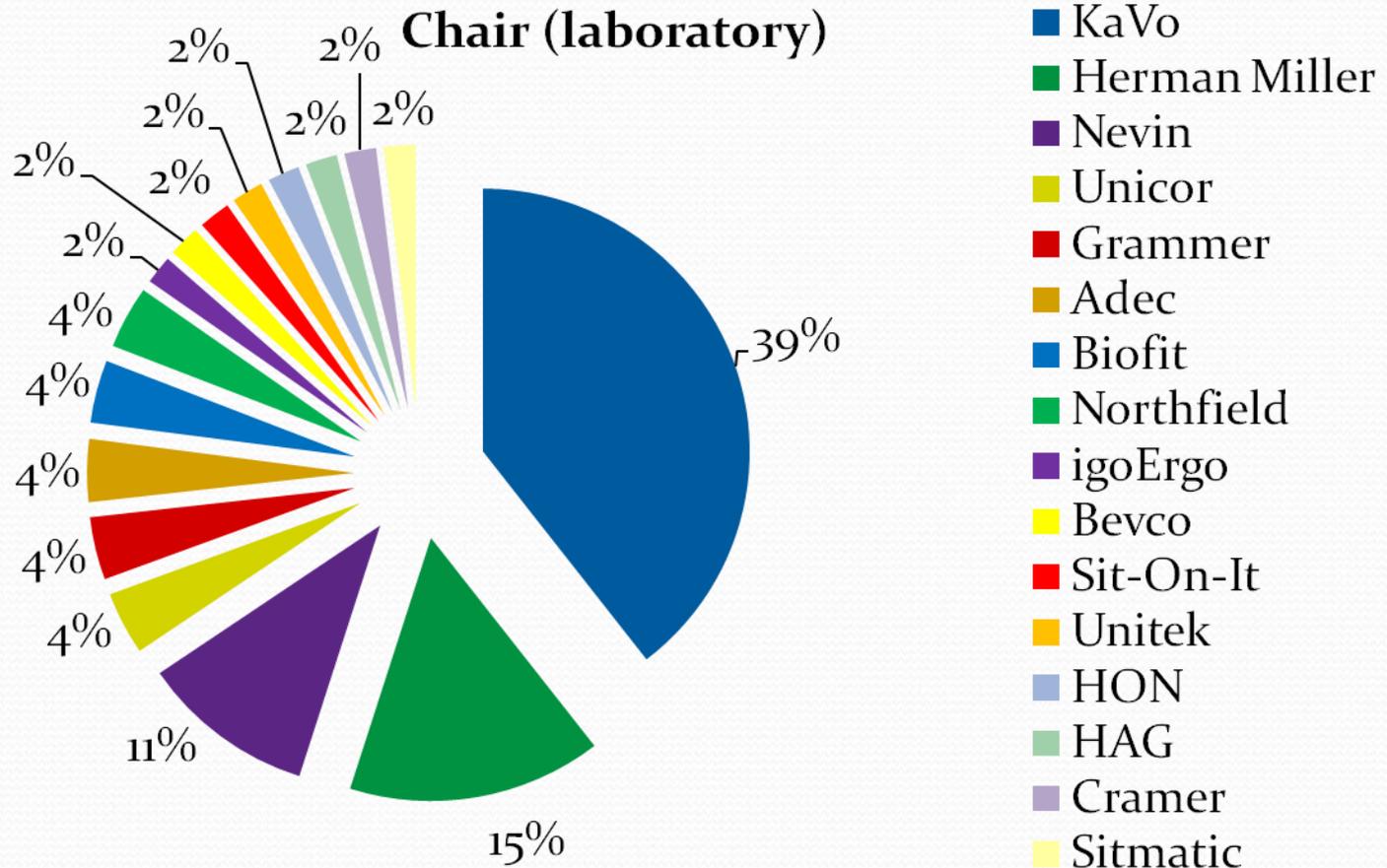
## Casting Machine



## **Chair (laboratory)**

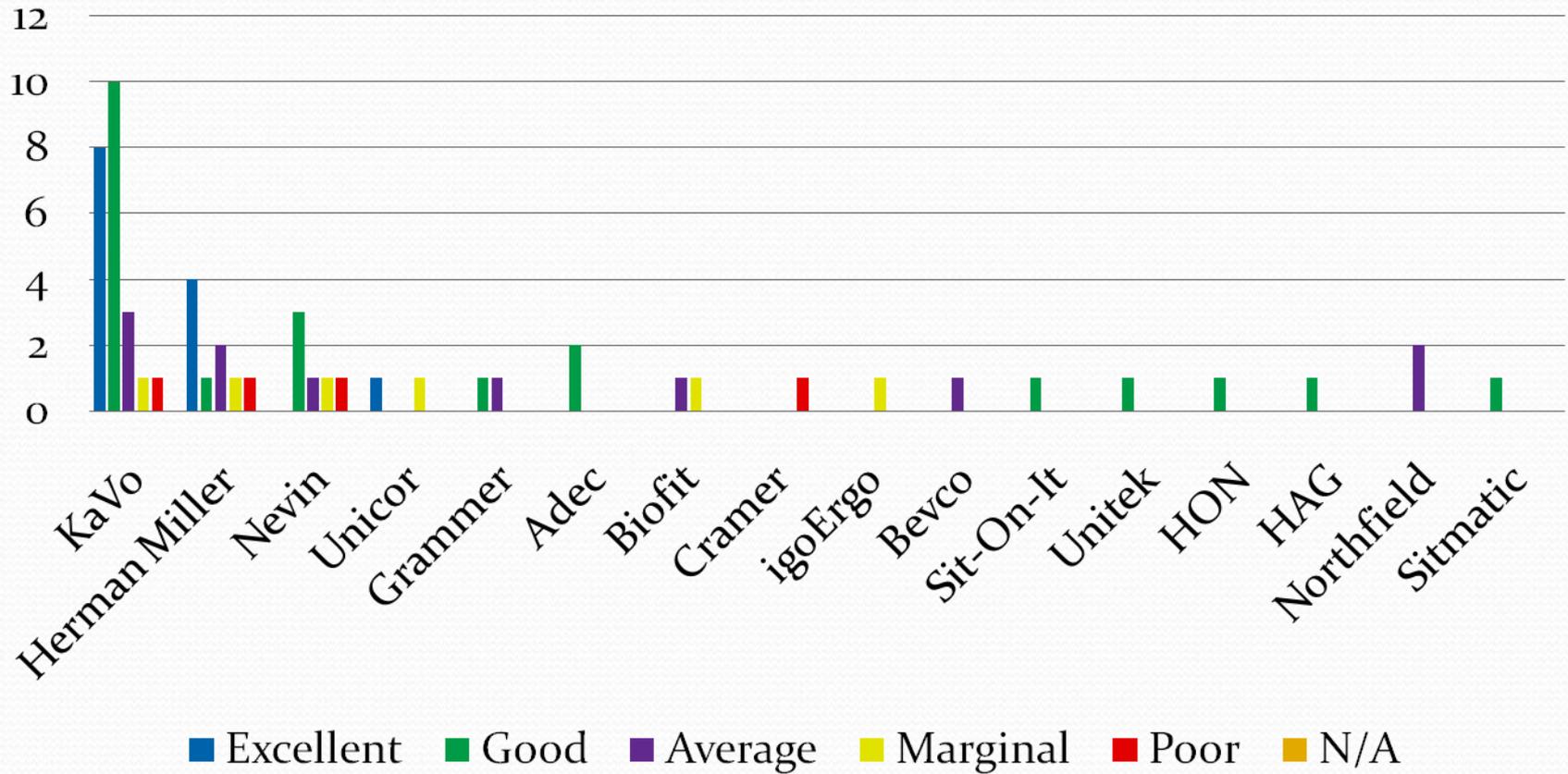
This survey revealed that many USAF dental labs used chairs manufactured by KaVo 39%. The next most common models in Air Force dental facilities are Herman Miller 15%, Nevin 11%, Unicolor 4%, Adec 4%, Grammer 4%, Northfield 4% and Biofit 4%. There was also a small percentage reported from Unitek 2%, Sit-On-It 2%, HAG 2%, igoErgo 2%, Bevco 2%, Cramer 2%, HON 2% and Sitmatic 2%. Overall the majority of users with KaVo lab chairs were satisfied. One survey participant commented that offering arm rests as an option would be beneficial. Chairs manufactured by Herman Miller and Nevin received mixed reviews.

# Market Share by Company



# User Satisfaction

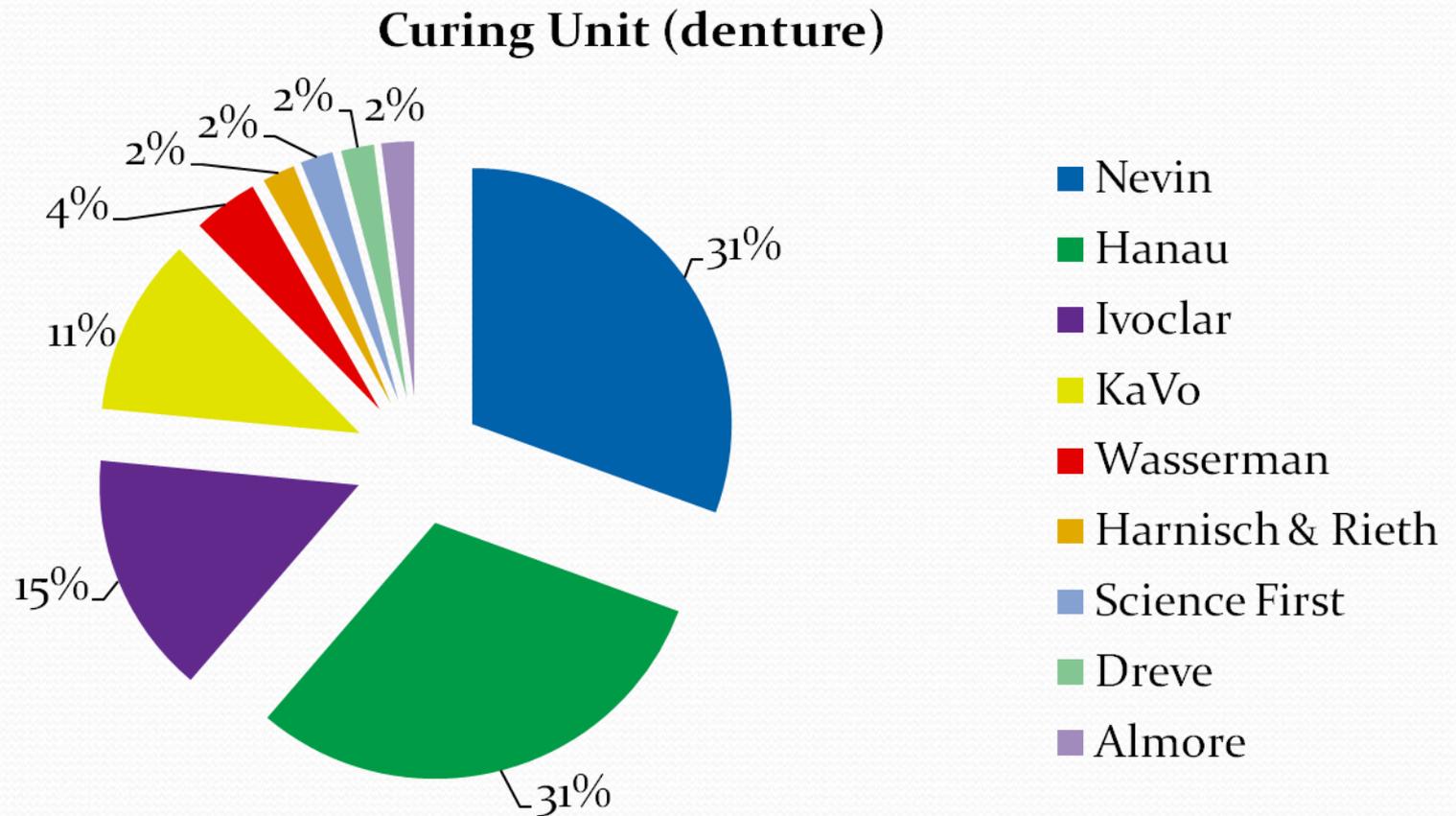
## Chair (laboratory)



## **Curing Unit (denture)**

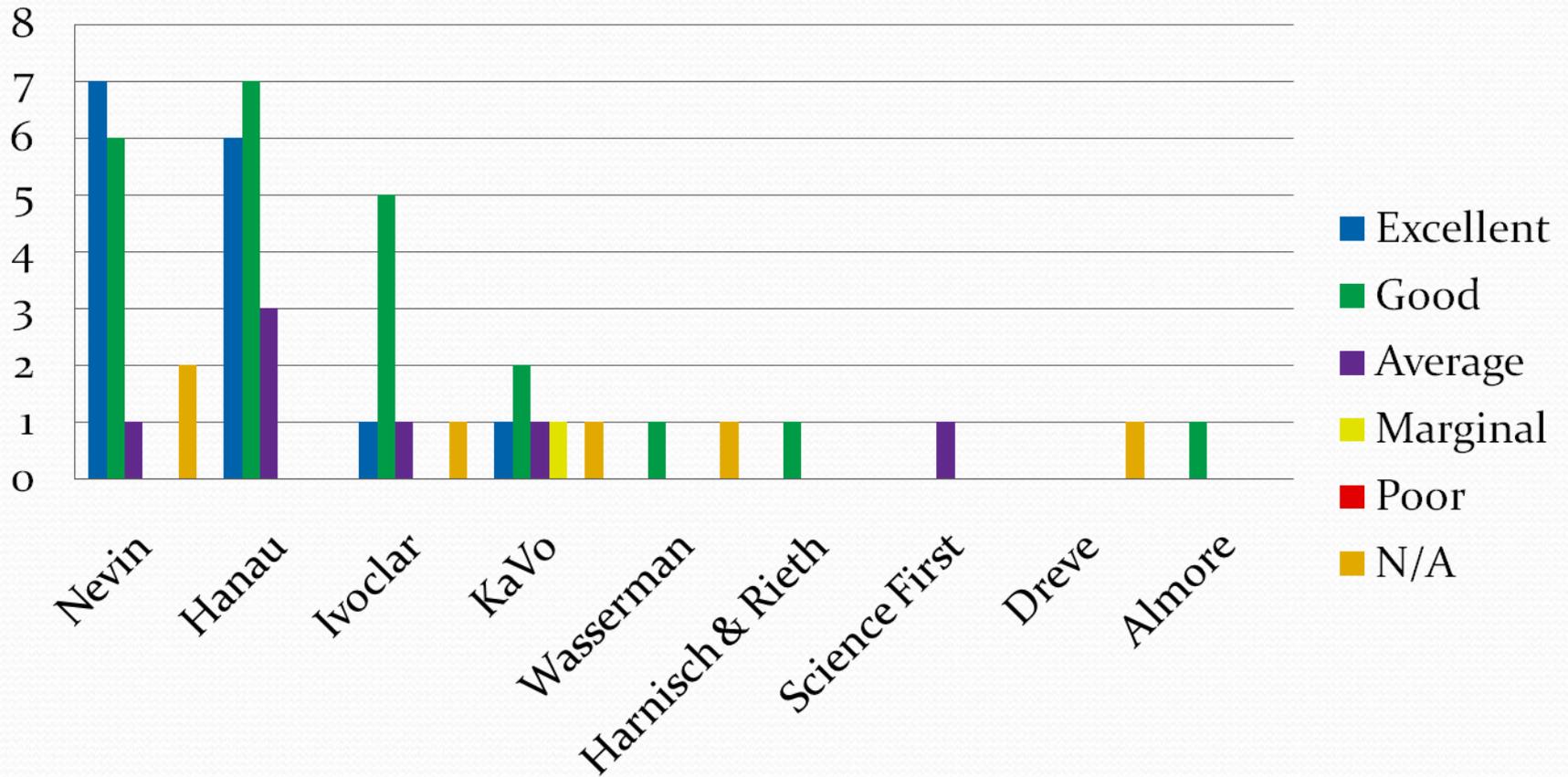
Denture curing units are used to polymerize acrylic resins. A dependable and proper functioning denture curing unit works to ensure the physical properties of acrylic materials are maintained by ensuring the proper curing temperature and working time. Our survey revealed that the majority of USAF labs used Nevin 25% and Hanau 25% curing units. Two other commonly used curing units are Ivoclar 15% and KaVo 11%. Other brands include Wasserman 4%, Harnisch & Reith 2%, Science First 2%, Dreve 2% and Almore 2%. Users remarked that the Nevin curing unit is easily programmed for curing times; no negative comments were provided.

# Market Share by Company



# User Satisfaction

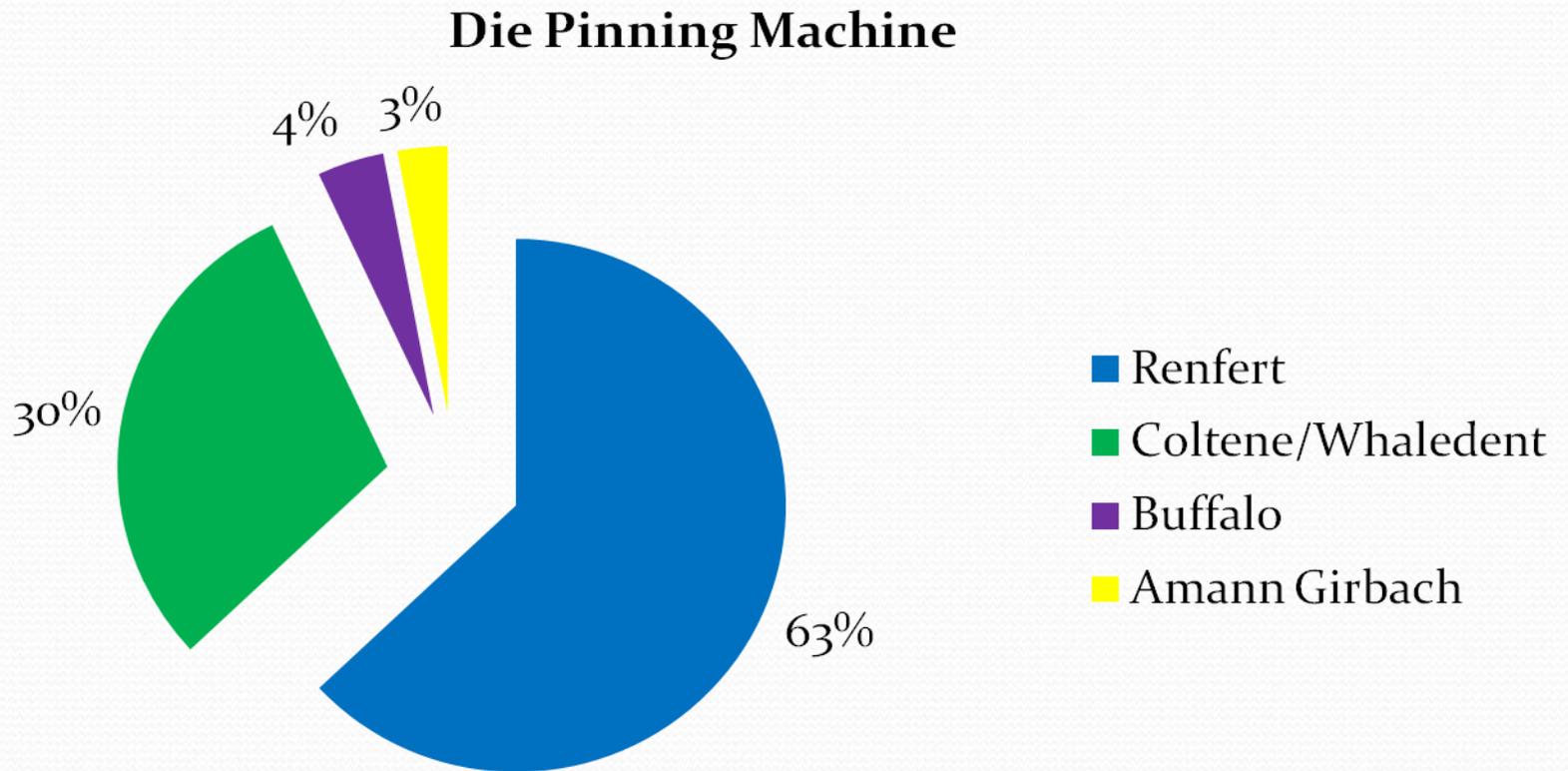
## Curing Unit (denture)



## **Die Pinning Machine**

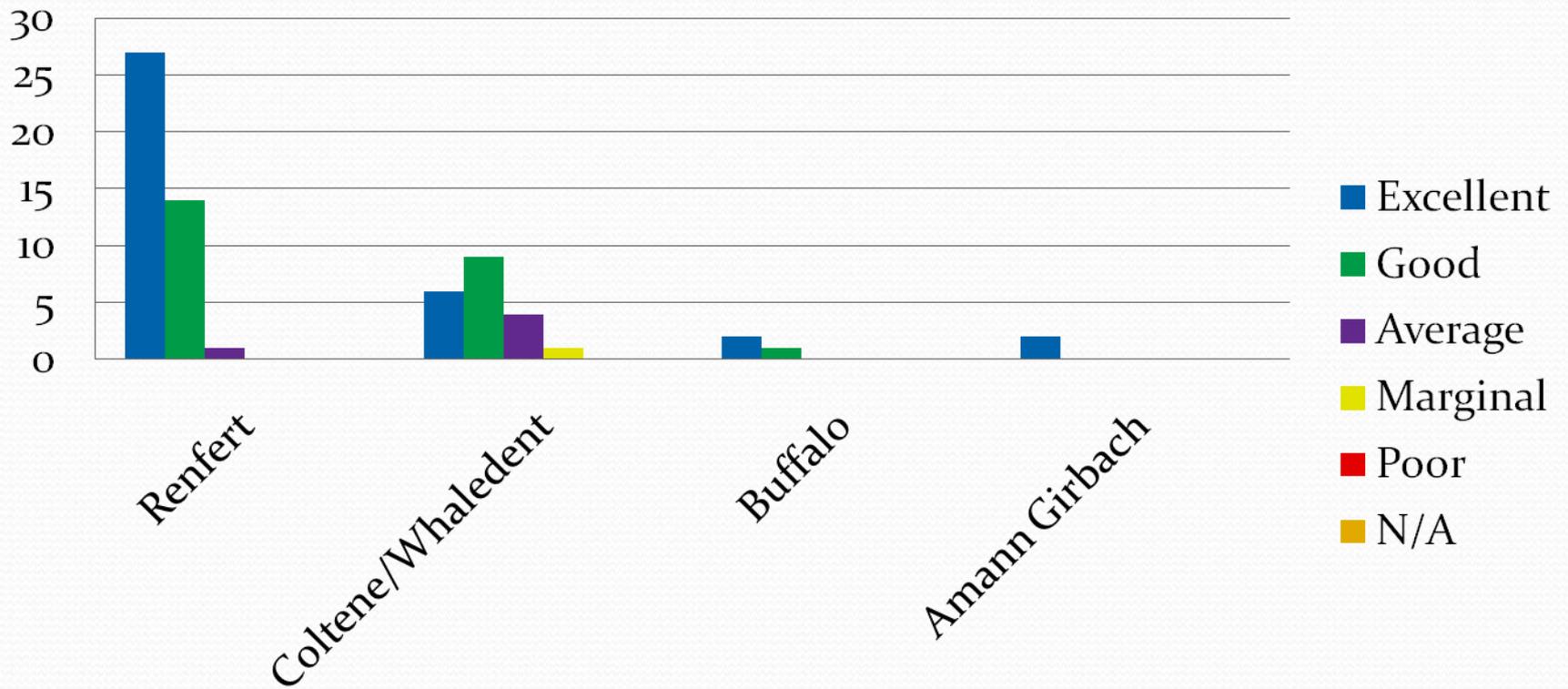
Dowel pin drills are used to drill paralleled dowel pin holes in the underside of an initial pour of a working cast. The largest USAF market share for die pinning machines is held by Renfert 63% followed by Coltene/Whaledent 30%, Buffalo 4%, and Amann Girbach 3%. Positive comments about the Renfert Topspin included ease of maintenance and reliability without any negative comments provided.

# Market Share by Company



# User Satisfaction

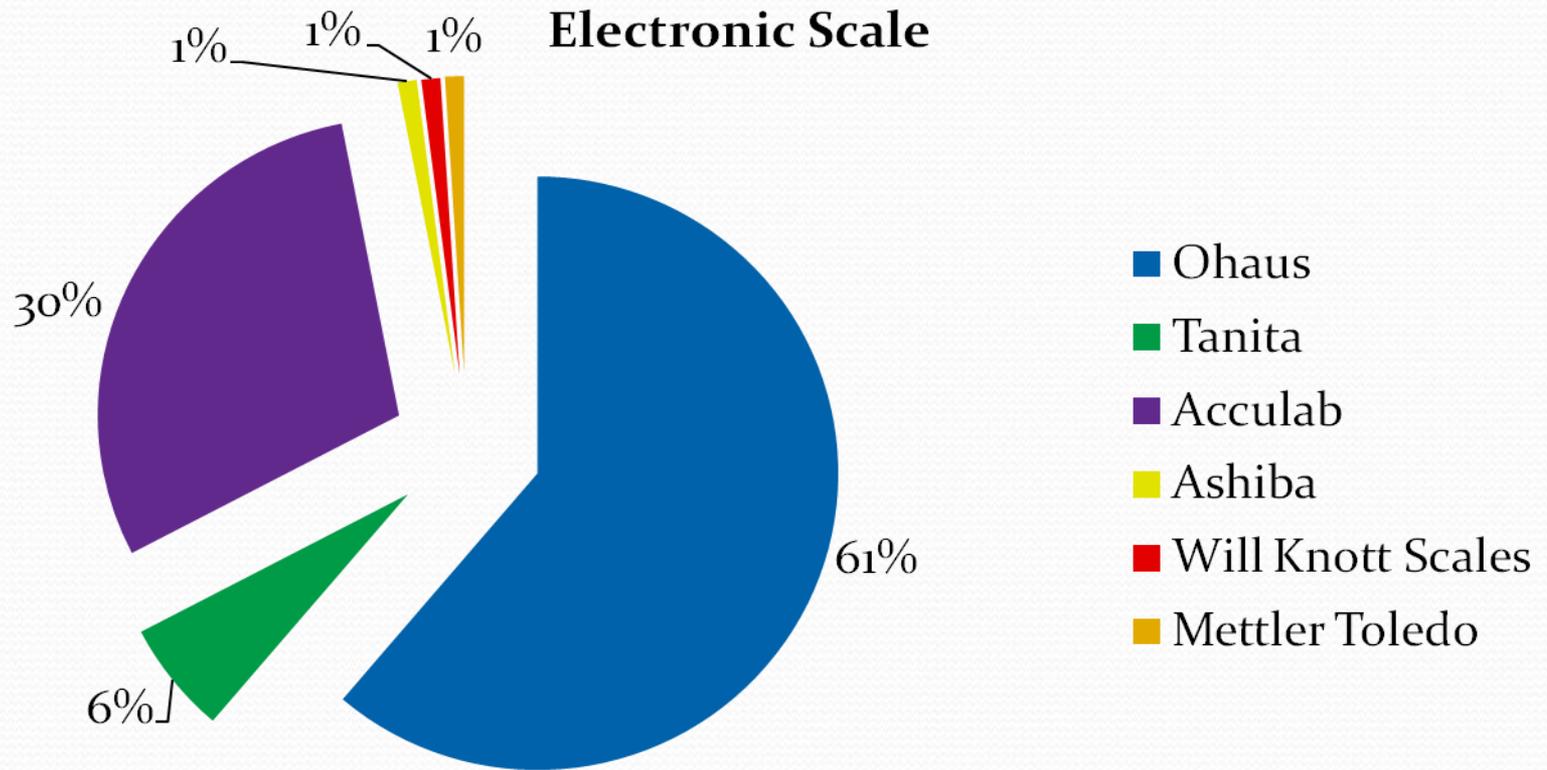
## Die Pinning Machine



## Electronic Scale

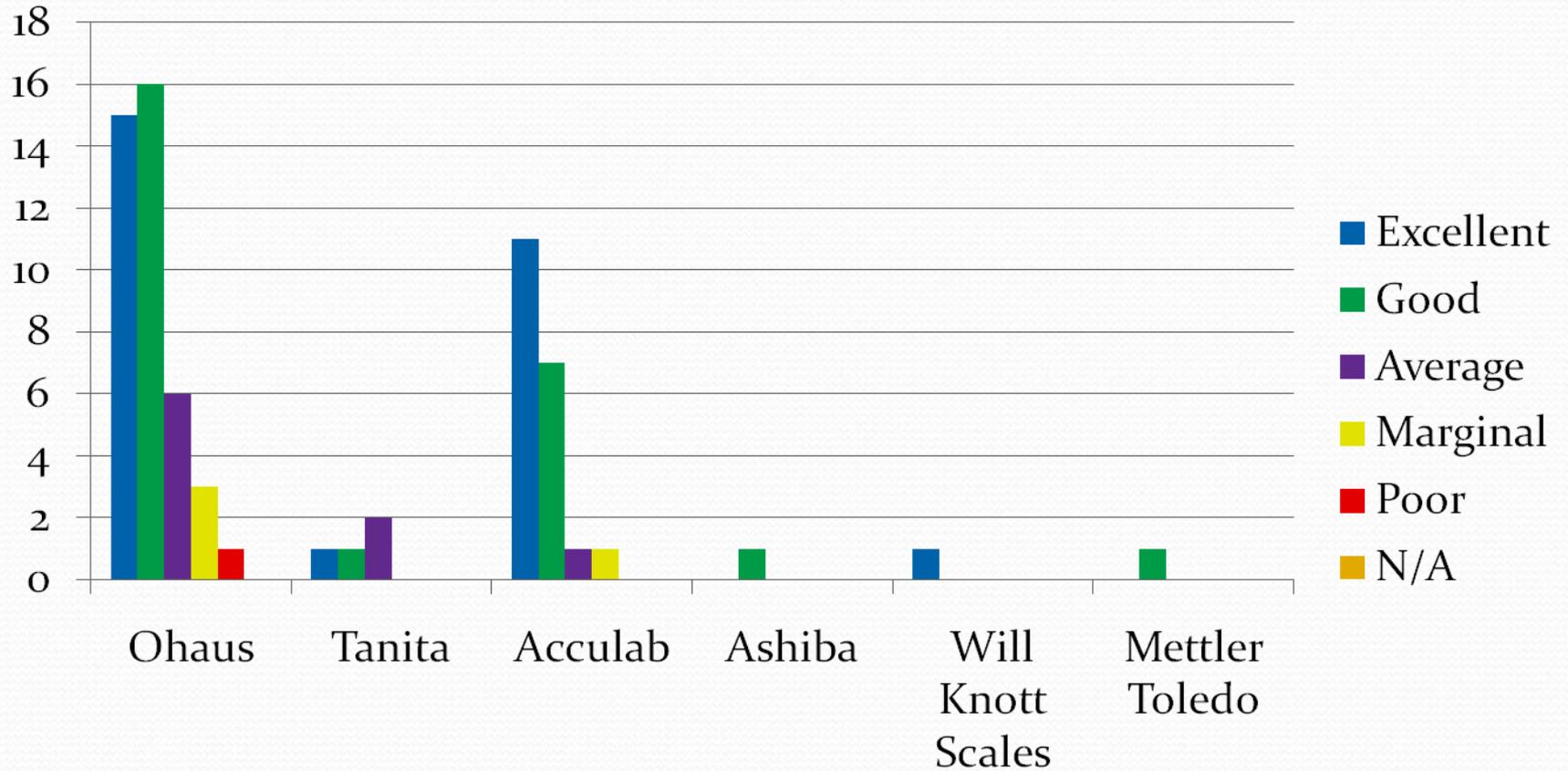
Laboratory scales are used to weigh a number of items in the dental lab, from wax patterns to metal alloys. Selecting an electronic scale can be a difficult task due to the variety of scales available. This survey determined that the largest market share by company is held by Ohaus 61%, followed by Acculab 29%, Tanita 6%, Ashiba 1%, Will Knott Scales 1% and Mettler Toledo 1%. The Ohaus scale received positive comments regarding its accuracy. Negative comments referred to it possibly being too accurate and many reported fluctuation on the hundredth of a gram.

# Market Share by Company



# User Satisfaction

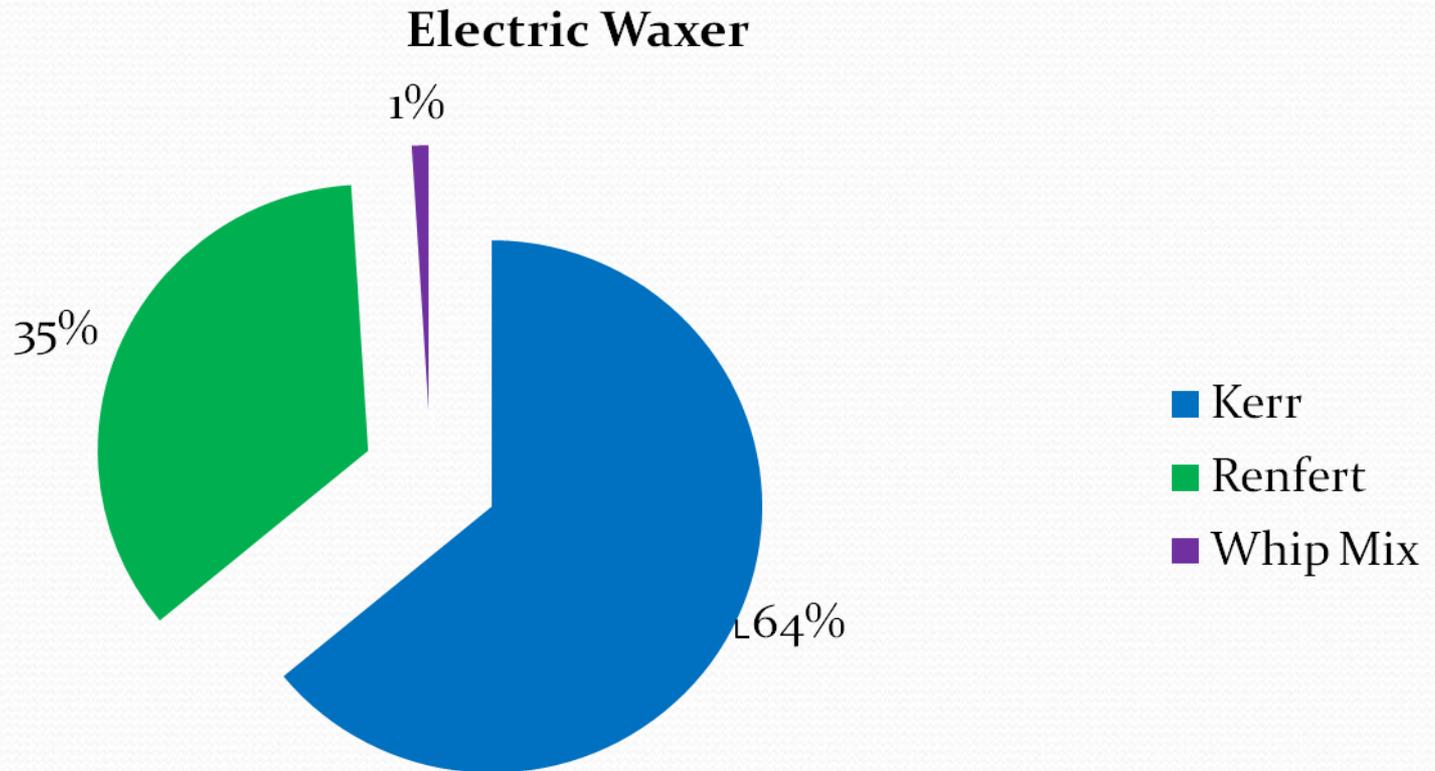
## Electronic Scale



## Electric Waxer

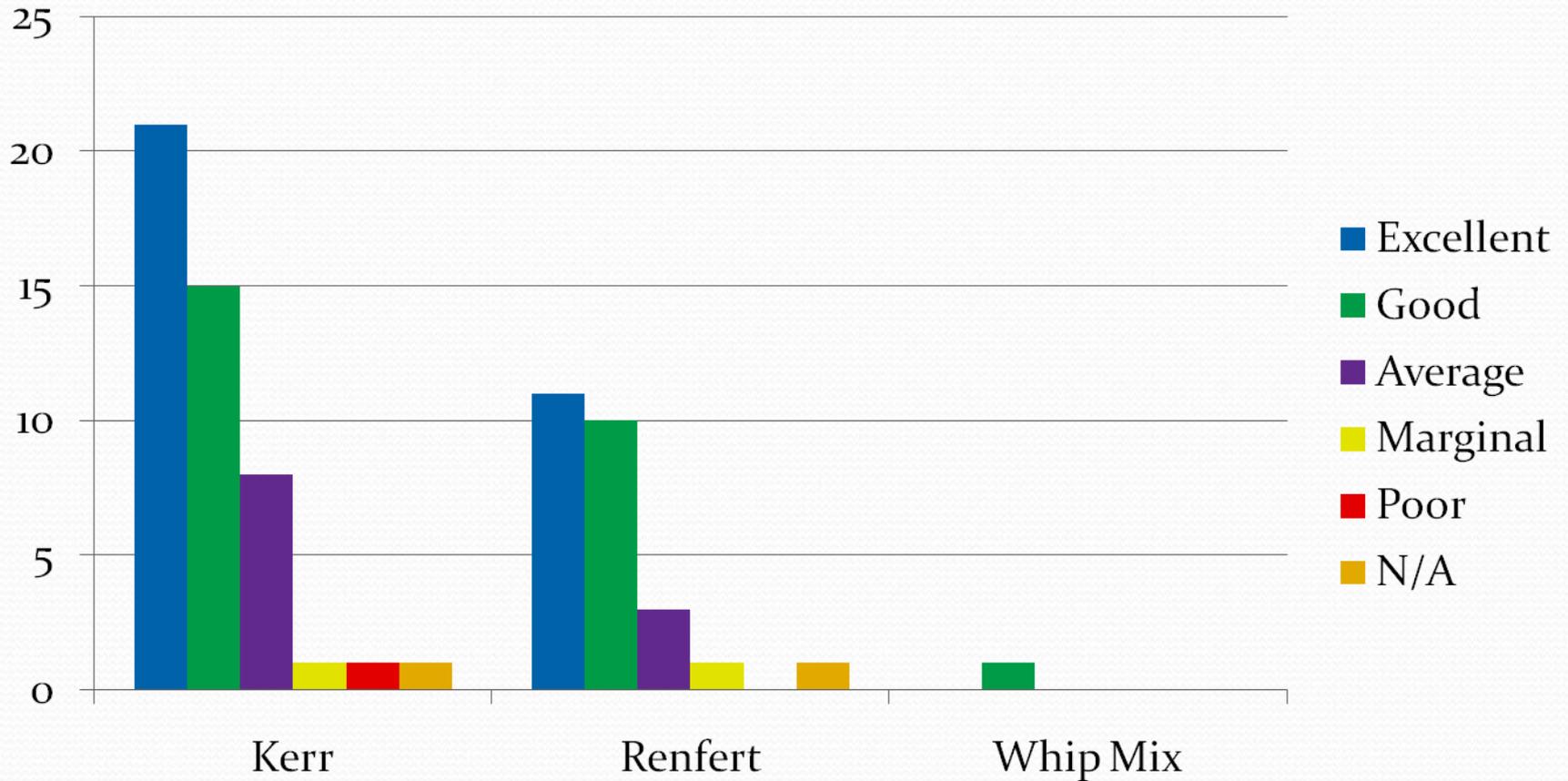
Electric waxers are designed to increase a waxer's production by eliminating going back and forth with an instrument to a flame. Our survey revealed the majority of USAF labs 64% have a Kerr electric waxer followed by Renfert 35% and Whip Mix 1%. The Kerr electric waxer received a negative comment about the difficulty of replacing the foam insulation on the handle. Renfert received a number of negative comments about the cork insulation/handle design, tips breaking easily and the unit's temperature not being able to exceed 392°F.

# Market Share by Company



# User Satisfaction

## Electric Waxer

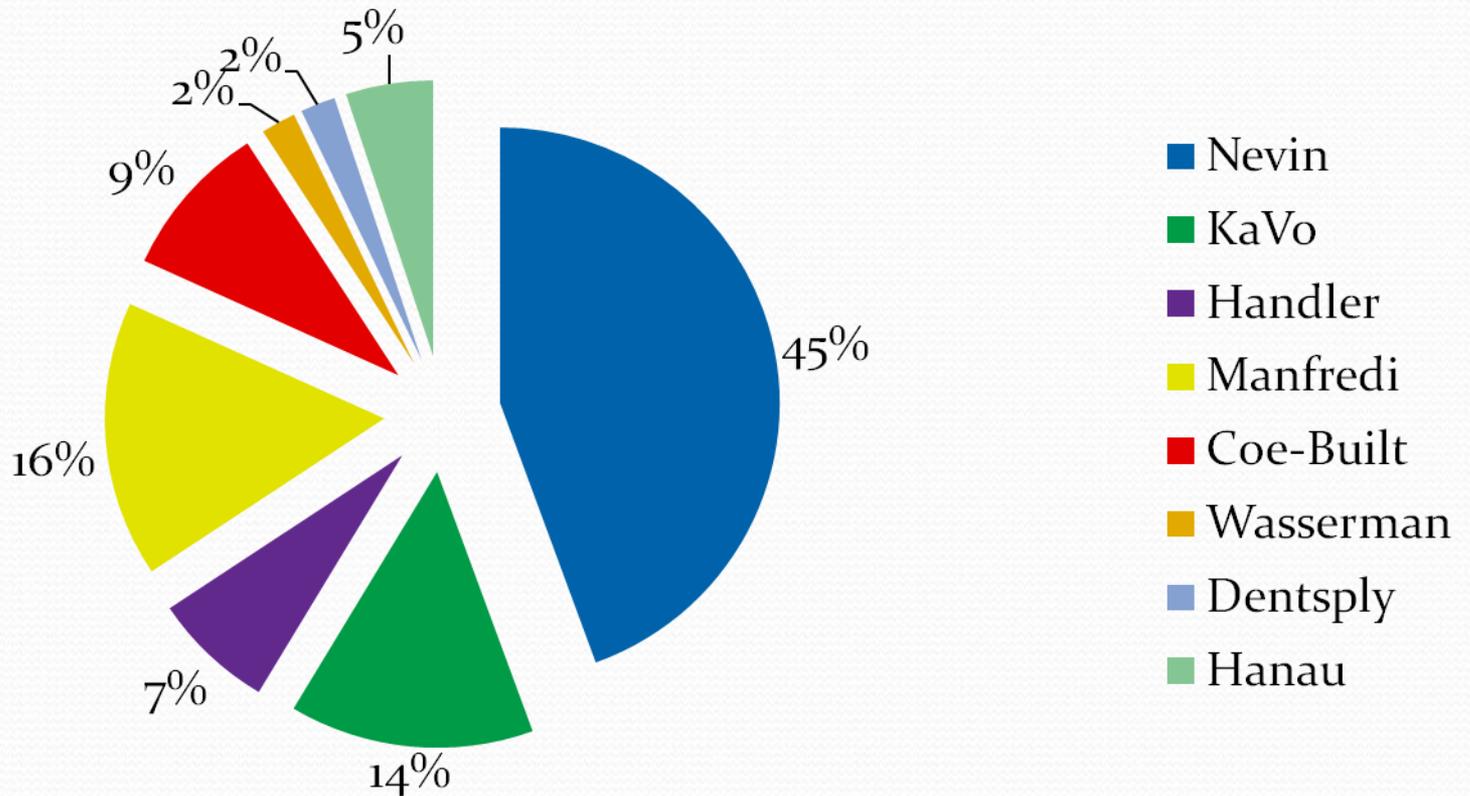


## Flask Press

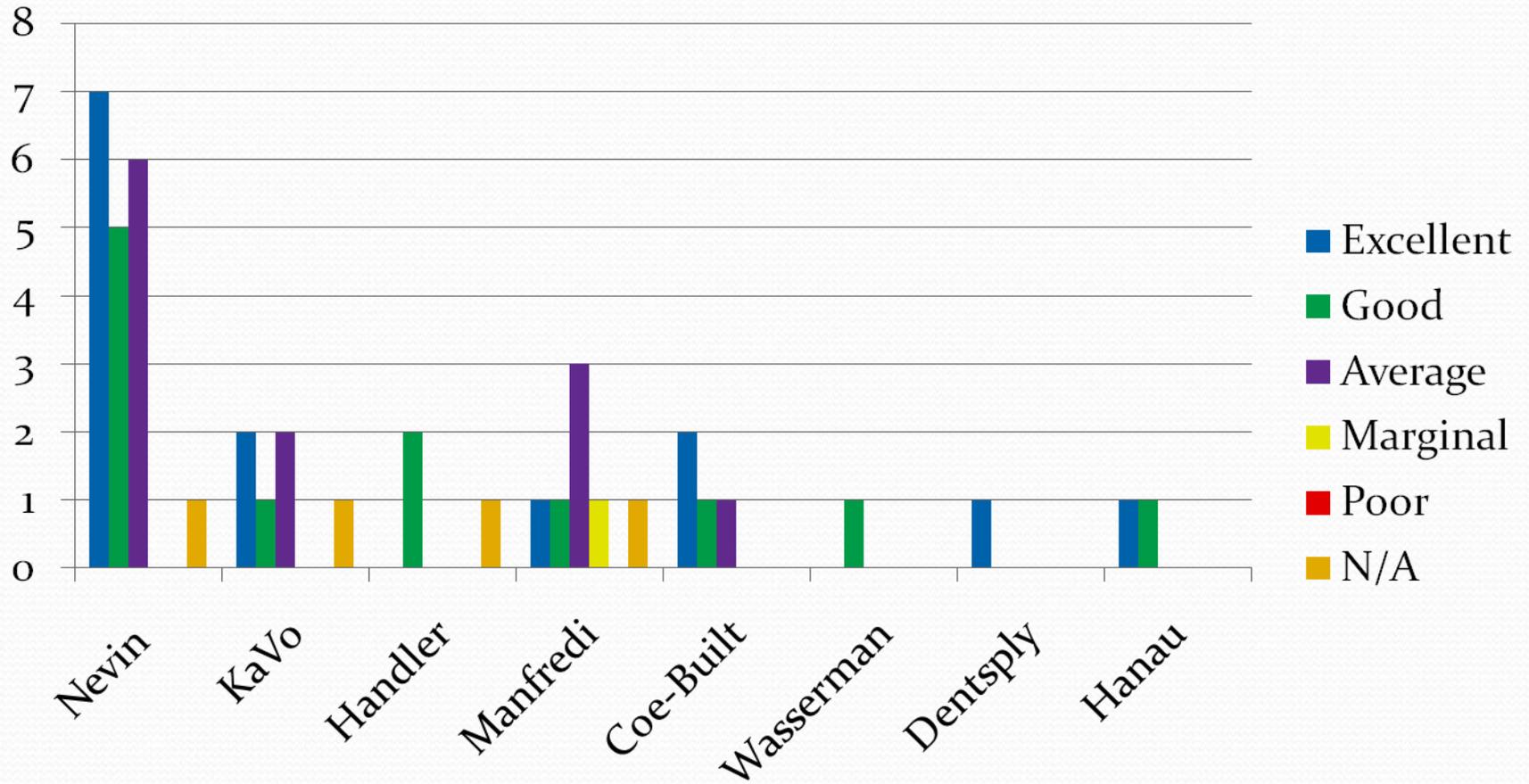
Flask presses are designed to ensure dense porosity free acrylic resin when processing acrylic prostheses. This survey revealed 45% of USAF labs have a flask press manufactured by Nevin. Other manufacturers included Manfredi 16%, KaVo 14%, Coe-Built 9%, Handler 7%, Hanau 5%, Wasserman 2%, and Dentsply 2%. Overall most labs were satisfied with their flask press. KaVo received one negative comment about the lever being too sensitive.

# Market Share by Company

## Flask Press



# User Satisfaction

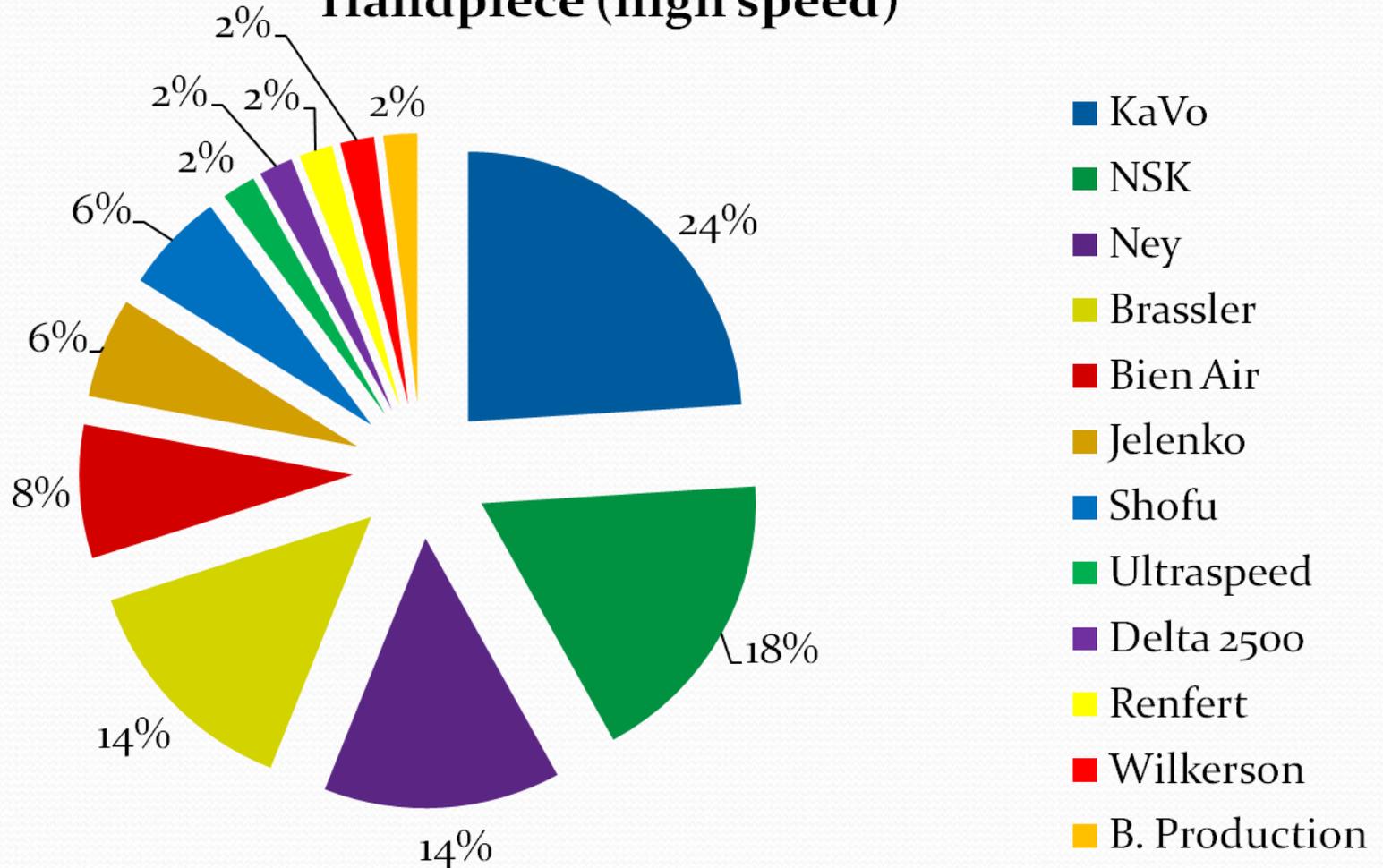


## **Handpiece (high speed)**

High-speed handpieces are routinely used to grind and shape porcelain restorations in the dental laboratory. High-speed handpieces use air driven motors to produce rpms from 0 to 30K. In this survey KaVo 24% had the largest market share, followed by NSK 18%, Ney 14%, Brassler 14%, Bien Air 8%, Jelenko 6%, Shofu 6%, Ultraspeed 2%, Delta 2500 2%, Renfert 2%, Wilkerson 2% and B. Production 2%. KaVo handpieces were consistently rated Good to Excellent receiving only one poor rating and one negative comment about foot pedal sensitivity. The next leading company NSK received all Good to Excellent ratings. Bien Air received negative comment regarding the handpiece requiring wall mounting and tendency to break and burn burs when using the lowest PSI setting.

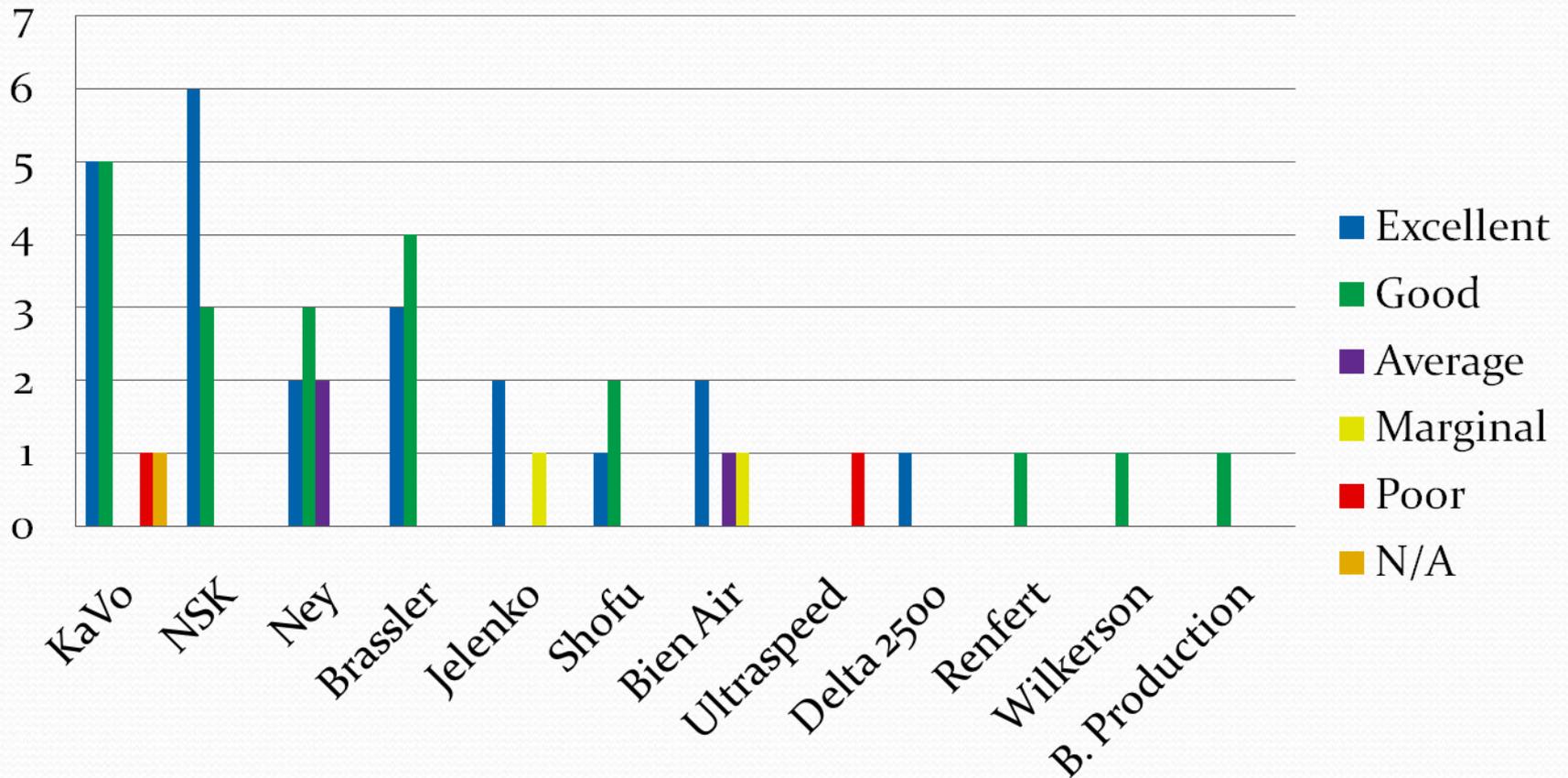
# Market Share by Company

## Handpiece (high speed)



# User Satisfaction

## Handpiece (high speed)

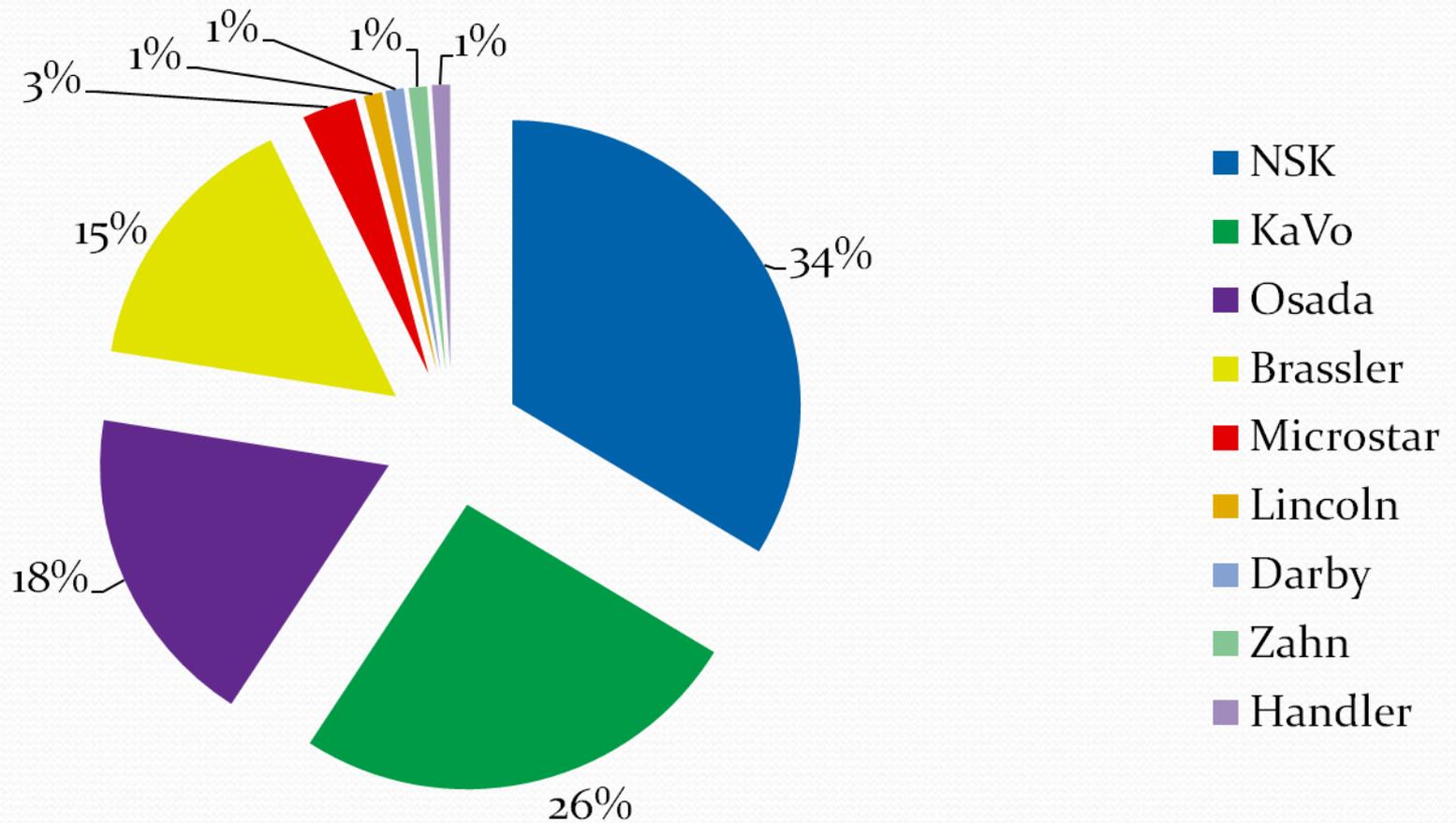


## **Handpiece (low speed)**

The low-speed handpiece performs many grinding and polishing functions in the dental laboratory. To be effective, an electric handpiece should be capable of variable speeds, demonstrate adequate power, and have a reversible motor. In this survey NSK had the largest market share 34%. Other popular brands include KaVo 26%, Osada 18%, Brassler 15%, Microstar 3%, Lincoln 1%, Darby 1%, Zahn 1% and Handler 1%. KaVo received a negative comment for its model's vibration. NSK and Brassler both received a negative comment for noise output of their handpieces.

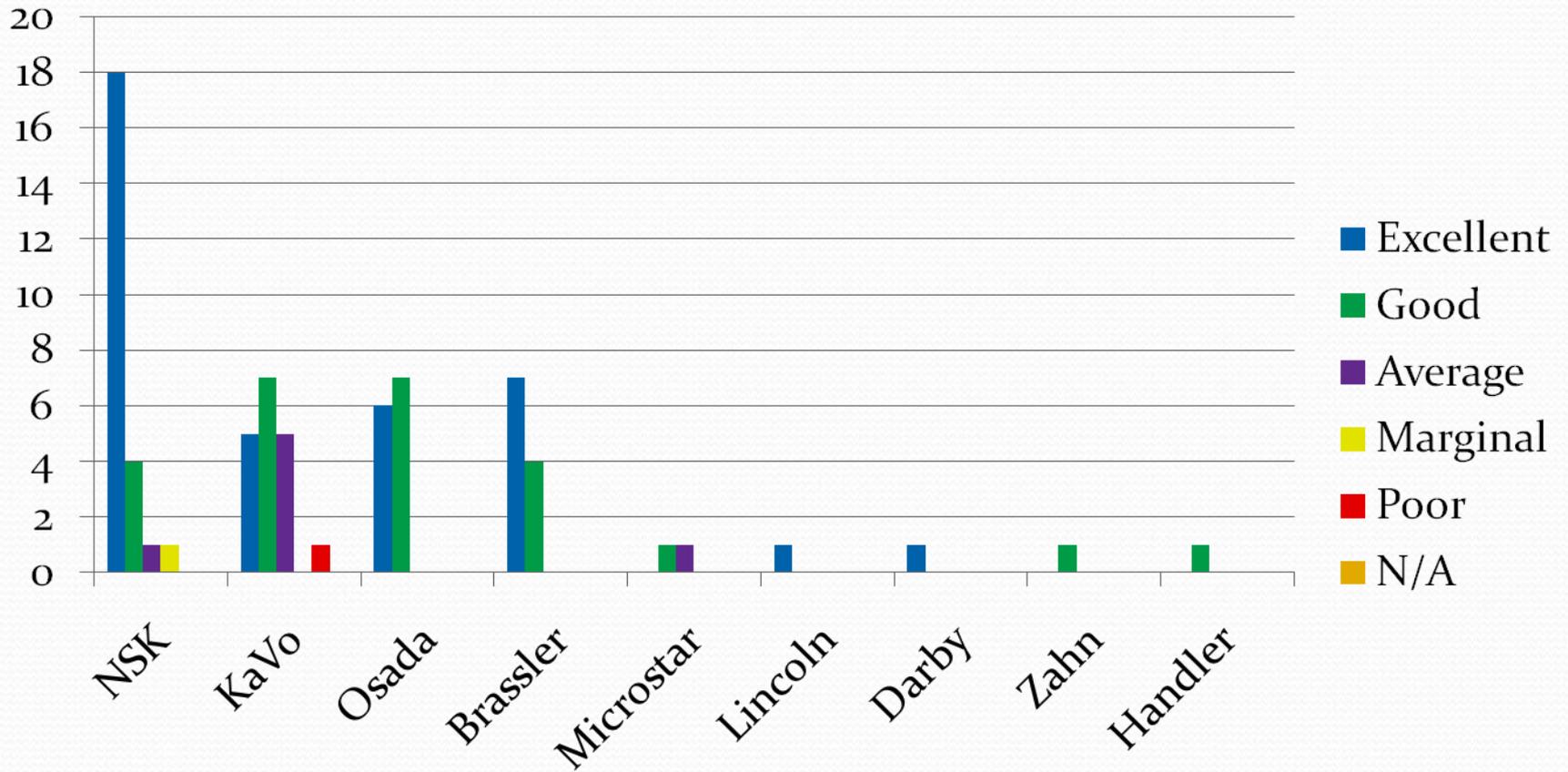
# Market Share by Company

## Handpiece (low speed)



# User Satisfaction

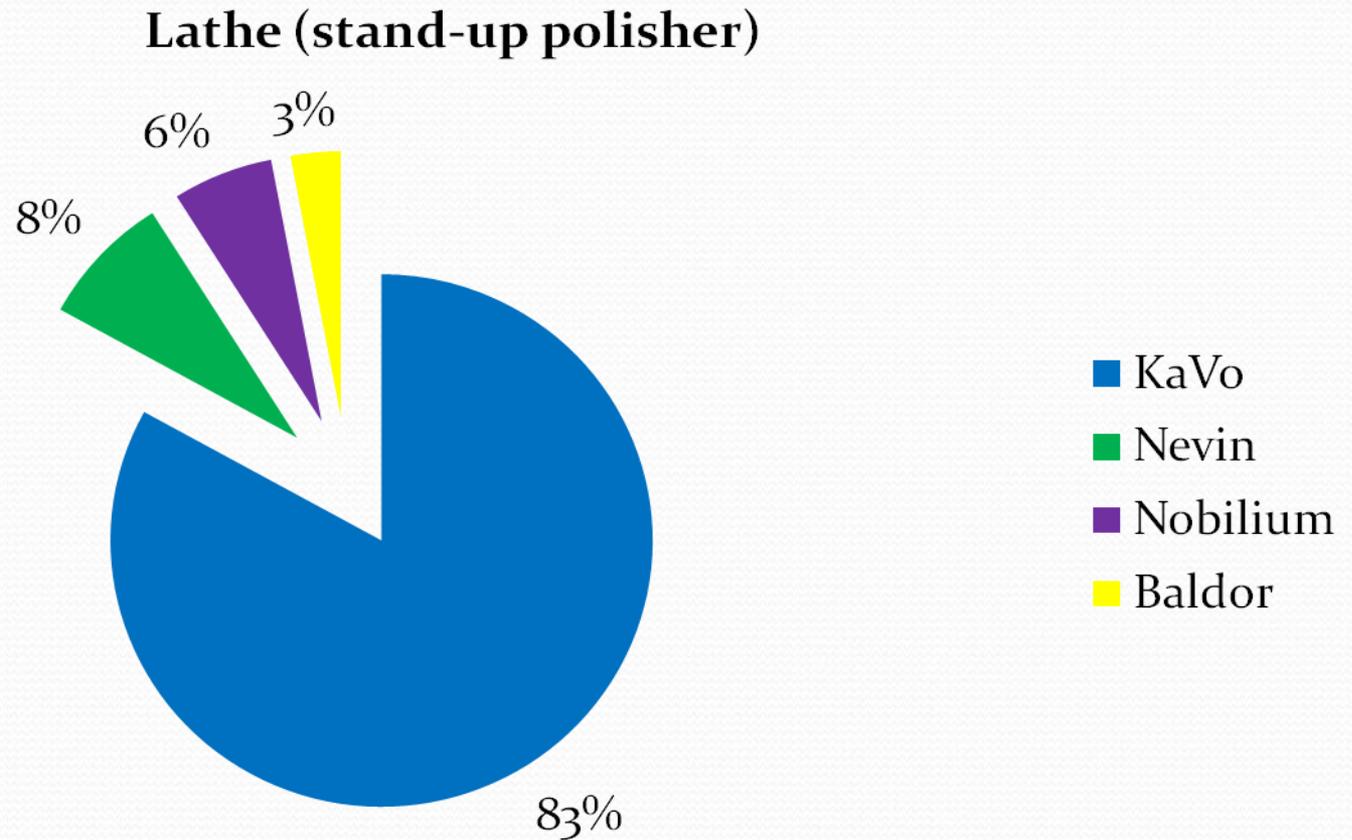
## Handpiece (low speed)



## **Lathe (stand-up polisher)**

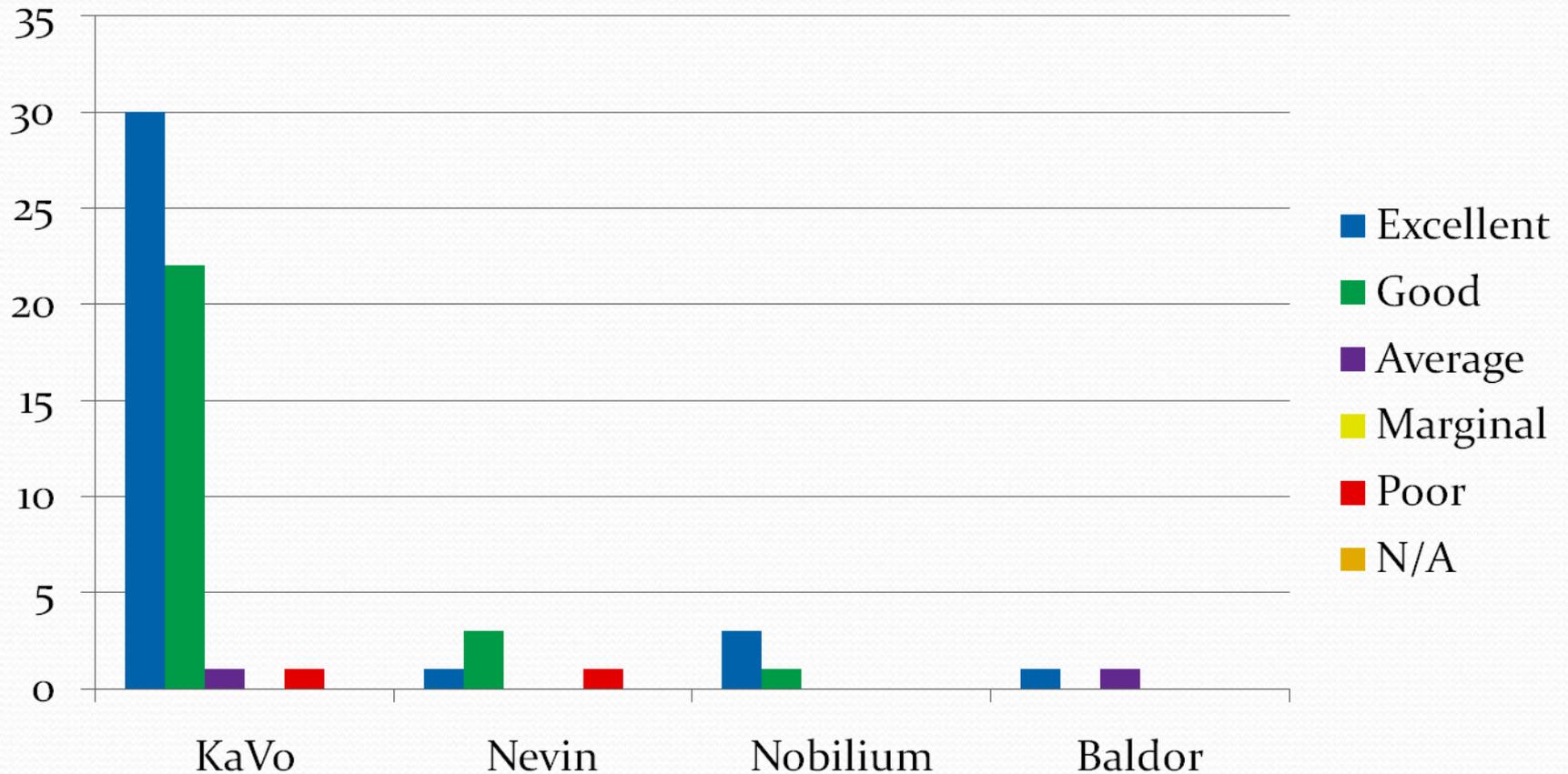
Stand-up lathes are generally used to smooth and polish acrylic appliances. Many stand-up polishers are equipped with a suction unit to vacuum the polishing materials away from the working area. The questionnaire indicated that the majority of the market share by company is held by KaVo 83%. The remaining stand-up polishers used are Nevin 8%, Nobilium 6%, and Baldor 3%. One AF clinic reported that both the KaVo and Nevin stand up lathe failed their local Bioenvironmental Engineering air flow test and will be “red” tagged.

# Market Share by Company



# User Satisfaction

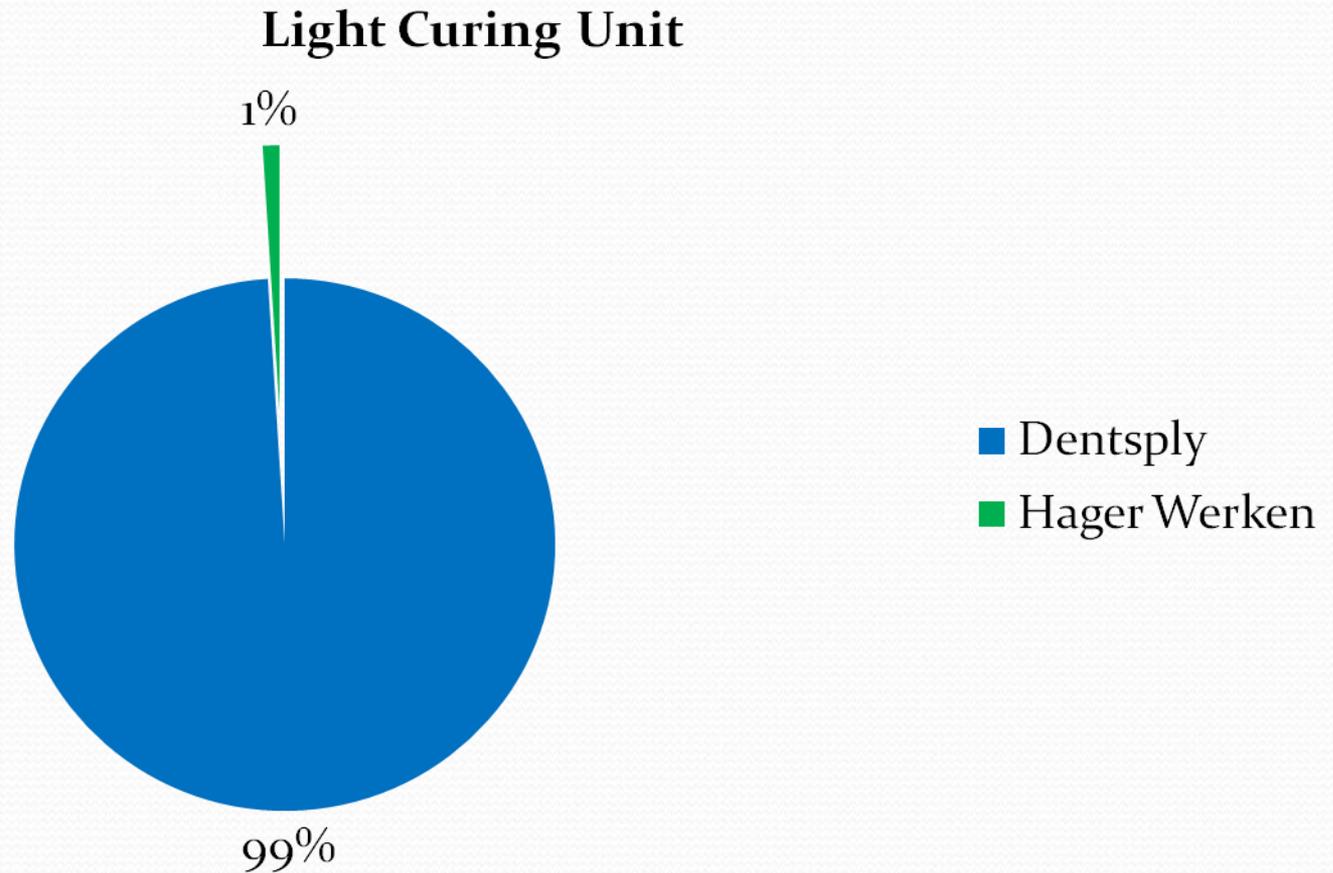
## Lathe (stand-up polisher)



## **Light Curing Unit**

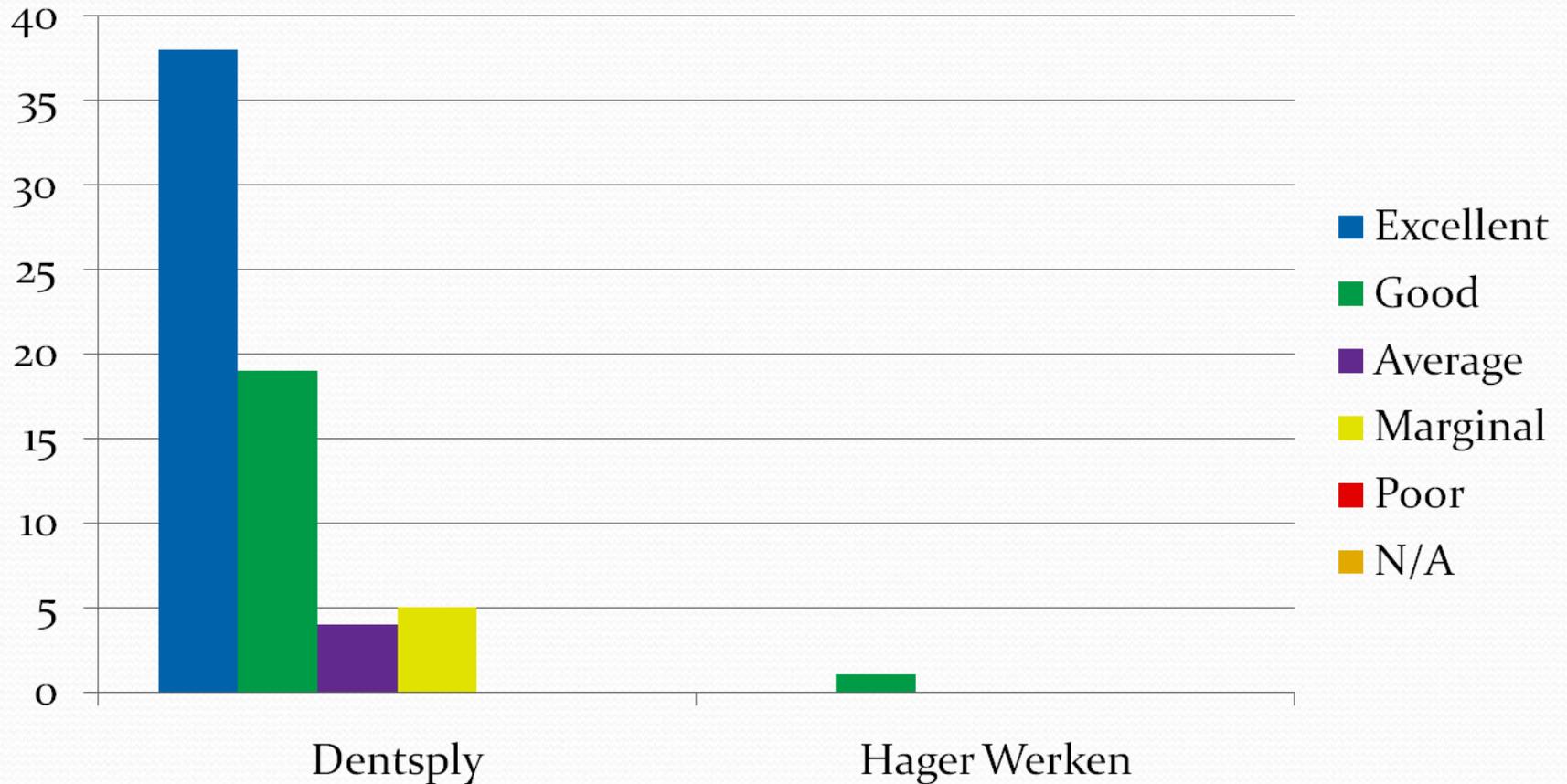
Light curing units are used in the lab to polymerize light cured acrylic resins and appliances. The majority of AF labs use a light curing unit from Dentsply 99%. One lab reported using a Hager Werken 1% unit for their light curing duties. Positive comments about Dentsply's light curing unit focused on its reliability and ease of use. On the negative side, users commented that it randomly turned off, replacement bulbs were expensive and was difficult to maintain. One user praised Hager Werken's unit for its solid exterior design while negatively commenting on the interior, stating the bulbs were too fragile.

# Market Share by Company



# User Satisfaction

## Light Curing Unit

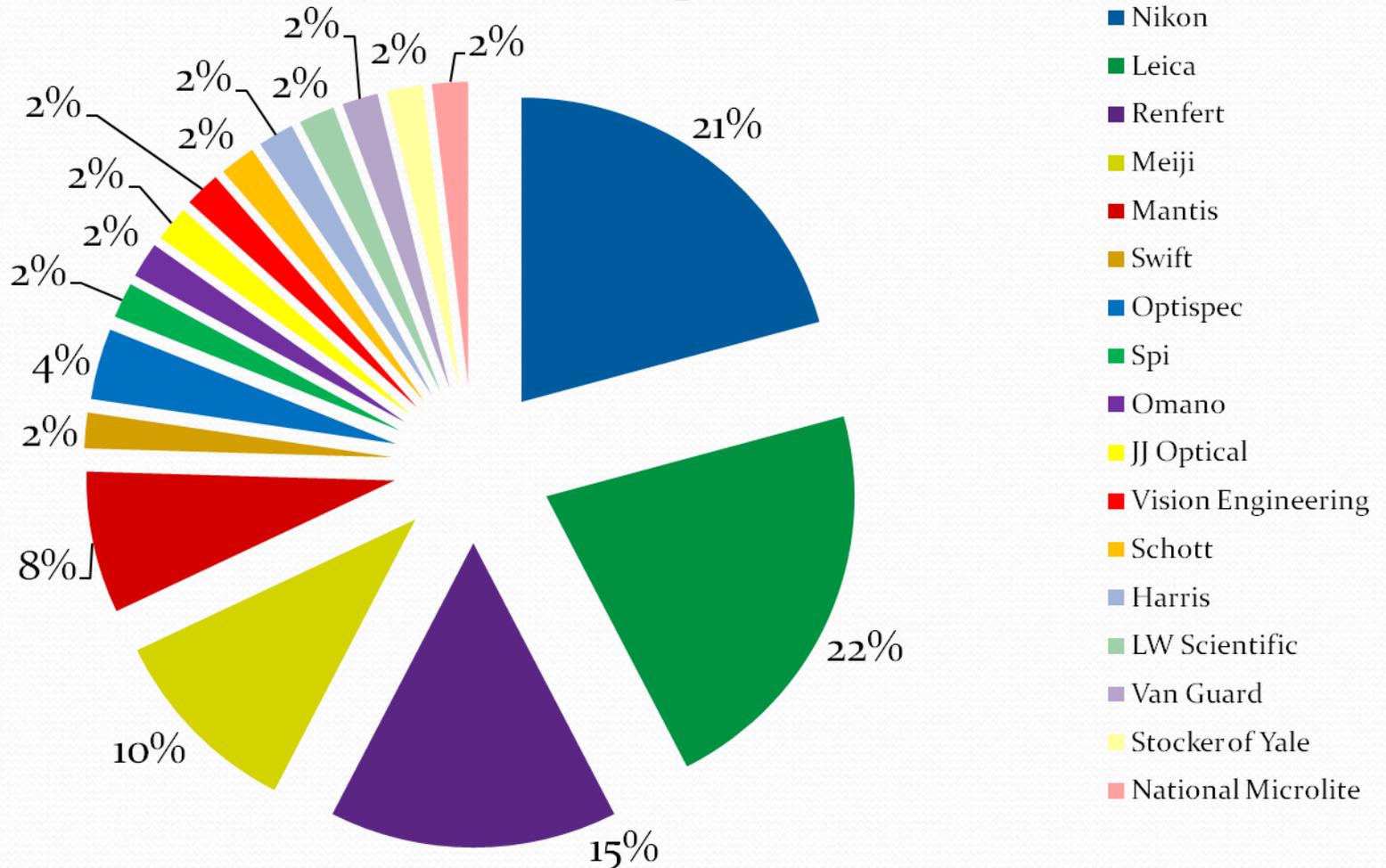


## **Microscope**

Microscopes are mainly used in the dental laboratory to trim dies, aid in margin fabrication and to seat castings. This survey revealed many USAF labs use the Leica 23% and Nikon 22% microscope, followed by Renfert 16% and Meiji 11%. Other microscopes identified on the survey were Mantis 8%, Optispec 4%, Swift 2%, Spi 5%, Omano 2%, JJ Optical 2%, Vision Engineering 2%, Schott 2%, Harris 2%, LW Scientific 2%, Van Guard 2%, Stoker of Yale 2% and National Microlite 2%. Many labs appeared very satisfied with their microscope but didn't report positive comments. Nikon received negative comments for its microscope light bulb and fuse repeatedly burning out. Leica received negative comments for bulkiness and knobs wearing out that hold the light source to the microscope.

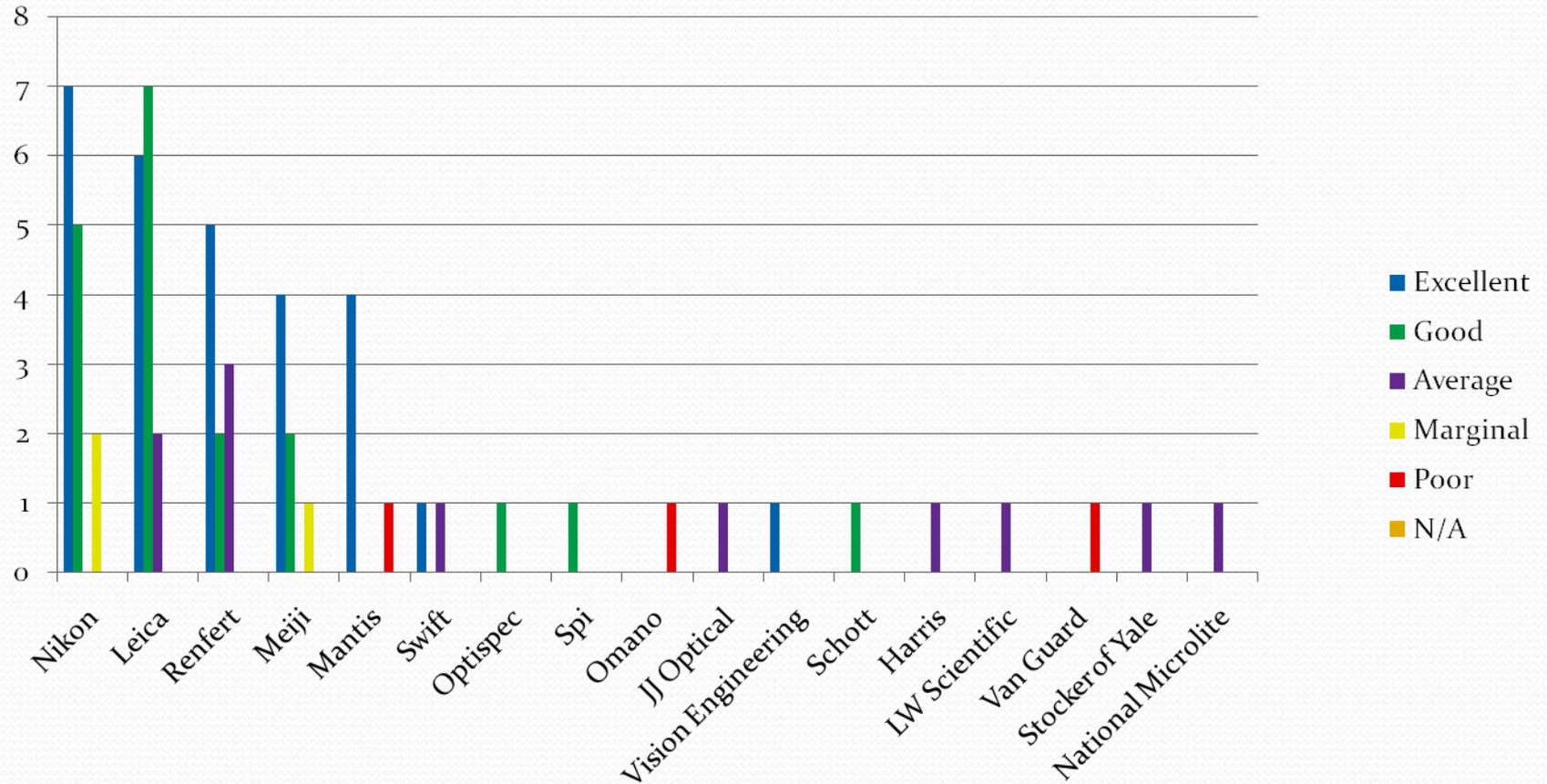
# Market Share by Company

## Microscope



# User Satisfaction

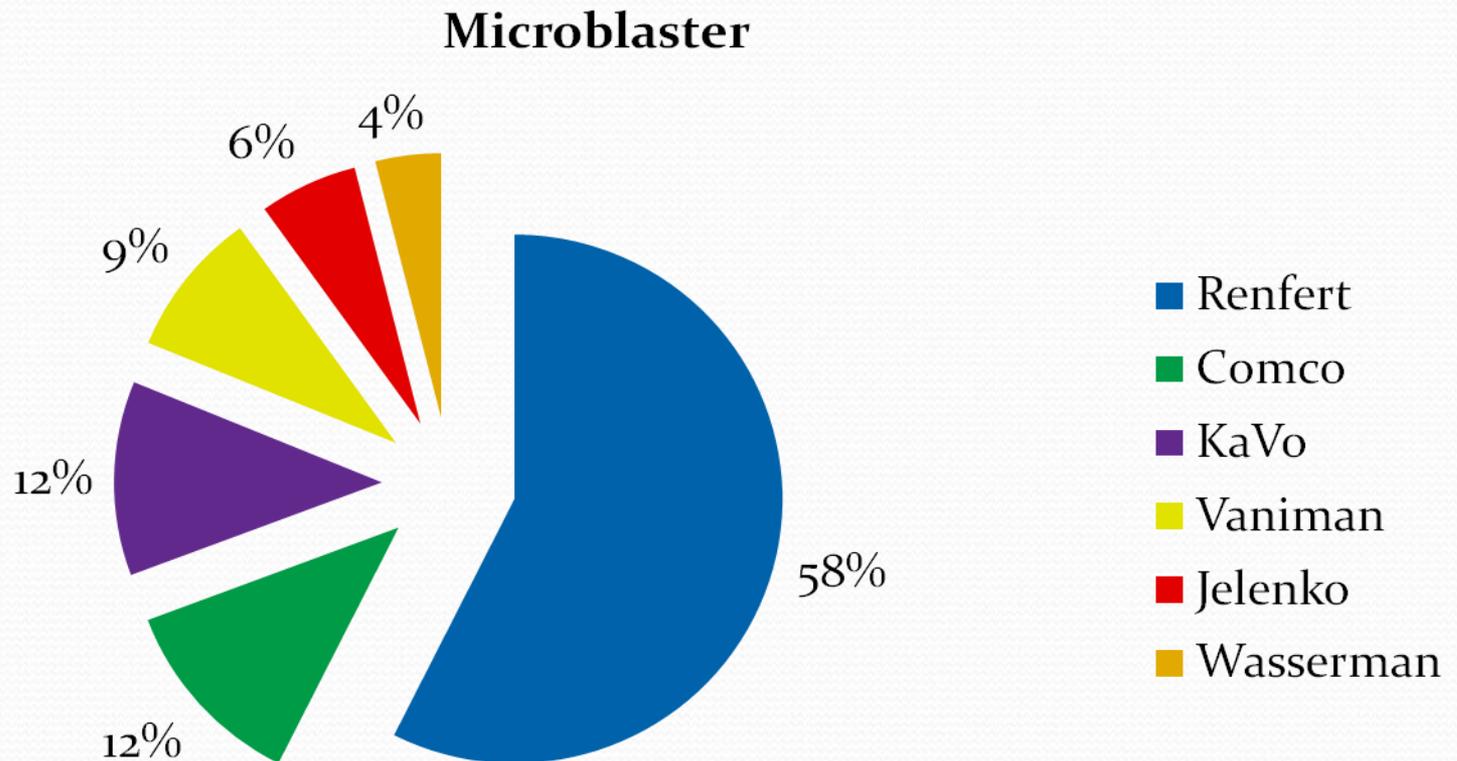
## Microscope



## **Microblaster**

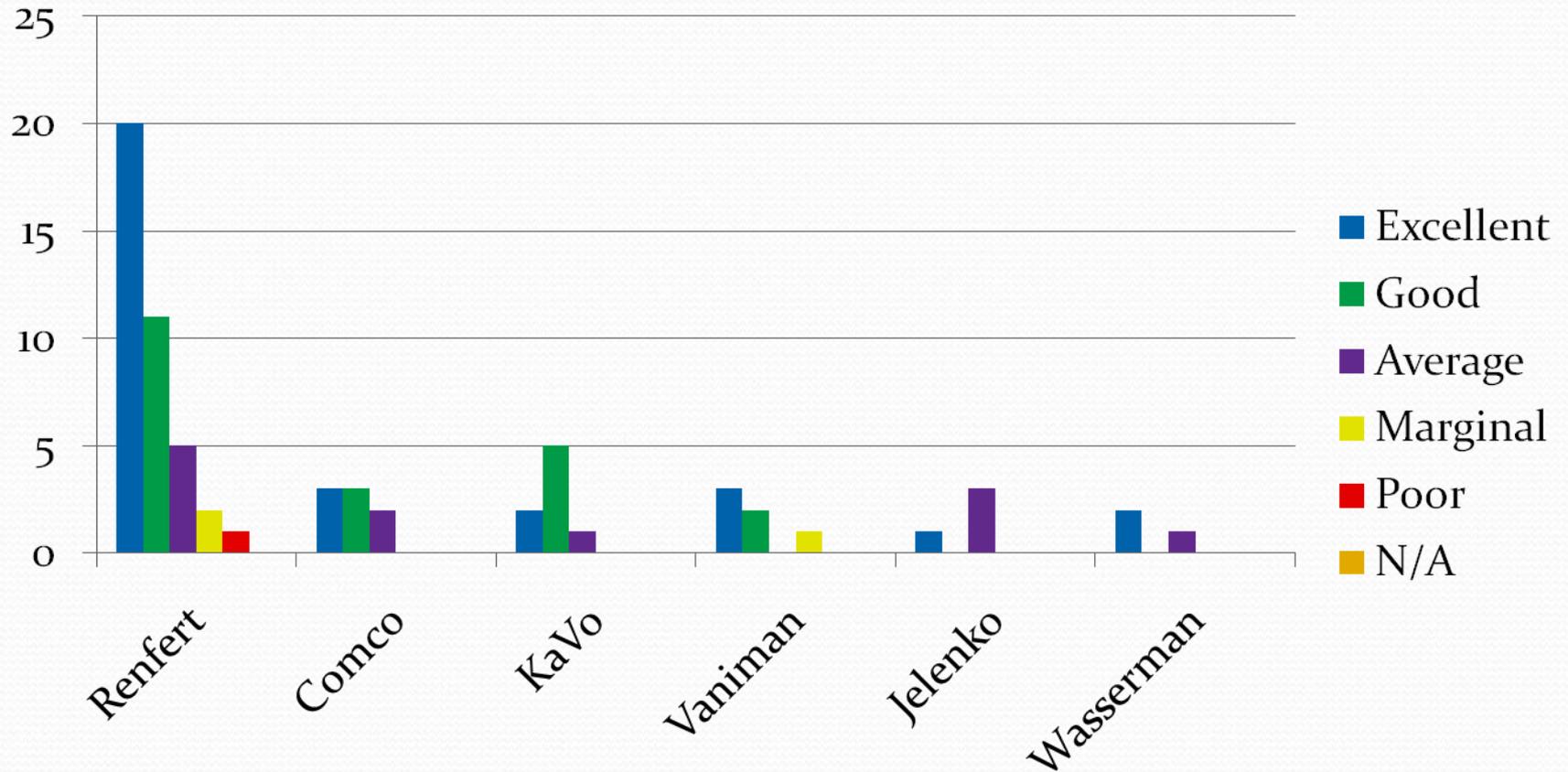
Microblasters are used to remove investment from metal-ceramic castings and to prepare metal substructures before and after receiving an oxidation. They also can be used to clean and cut porcelain surfaces. Microblasters may be equipped with single or multiple tanks filled with aluminum oxide or glass beads. The majority of USAF labs had Renfert 58% microblasters followed by Comco 12% and KaVo 12%. Other manufacturers included Vaniman 9%, Jelenko 6% and Wasserman 4%. Most of the microblasters recorded mixed reviews with no comments provided. Vaniman received a negative comment for inconsistent flow of material through the nozzle.

# Market Share by Company



# User Satisfaction

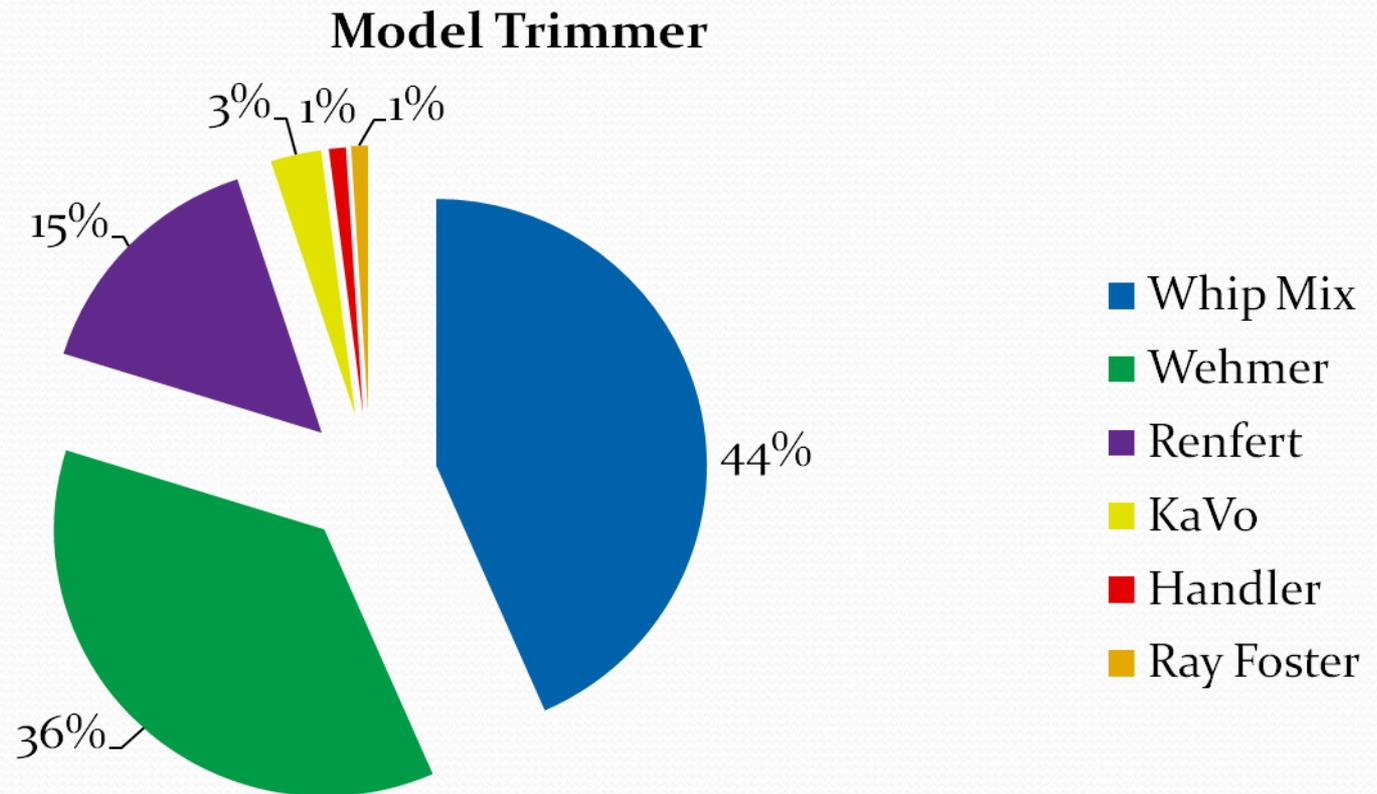
## Microblaster



## **Model Trimmer**

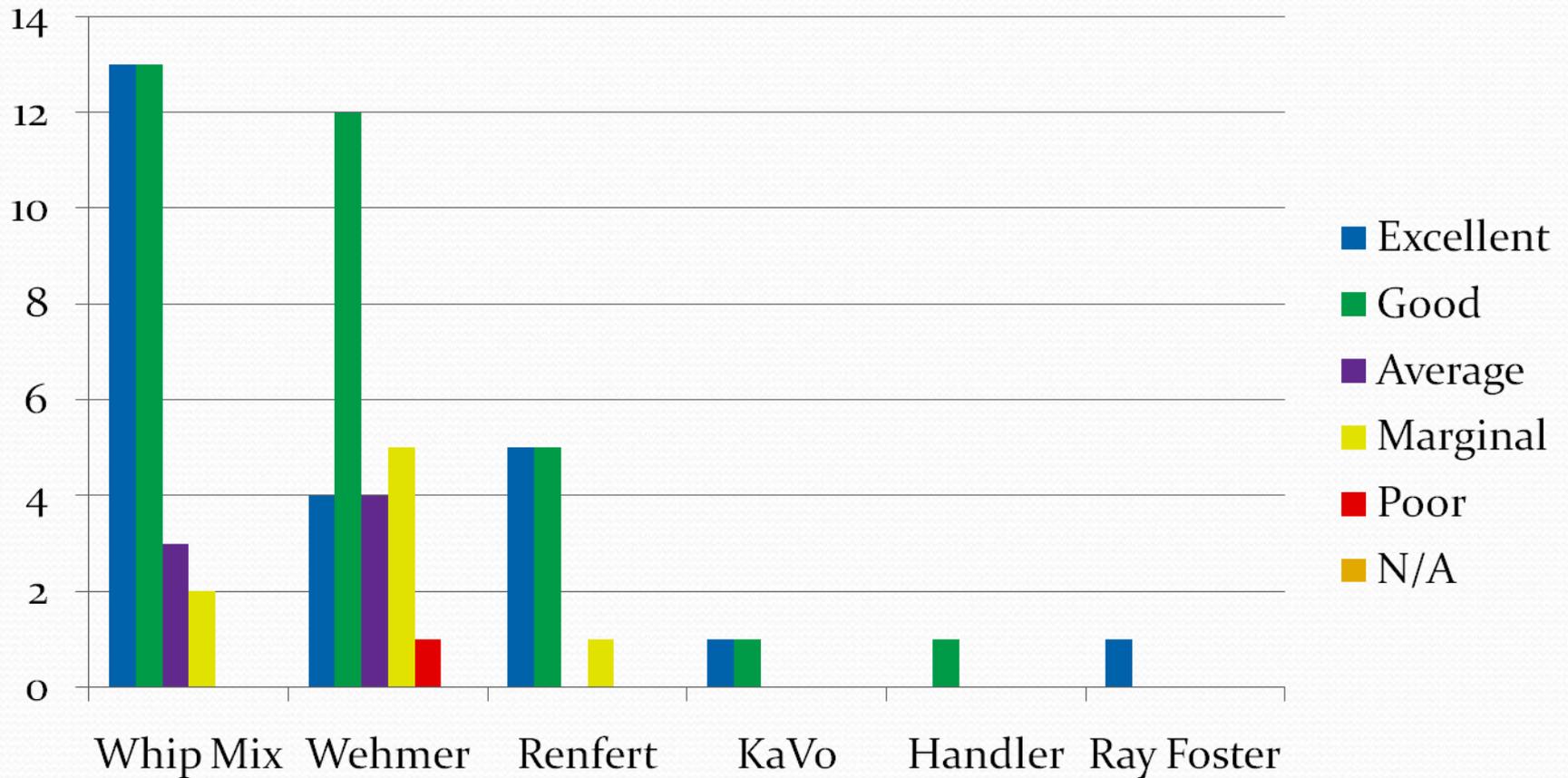
Model trimmers are used to trim casts to a desired shape or size. There are two types of model trimmers on the market dry model trimmers and wet model trimmers. The majority of USAF labs use model trimmers manufactured by Whip Mix 44%, followed by Wehmer 36% and Renfert 15%. Other companies included KaVo 3%, Handler 1% and Ray Foster 1%. Wehmer received negative comment for consistently clogging, inadequate water flow and difficult maintenance. Positive comments about the Renfert model trimmer focused on its powerful motor. On the negative side, there were concerns about reliability.

# Market Share by Company



# User Satisfaction

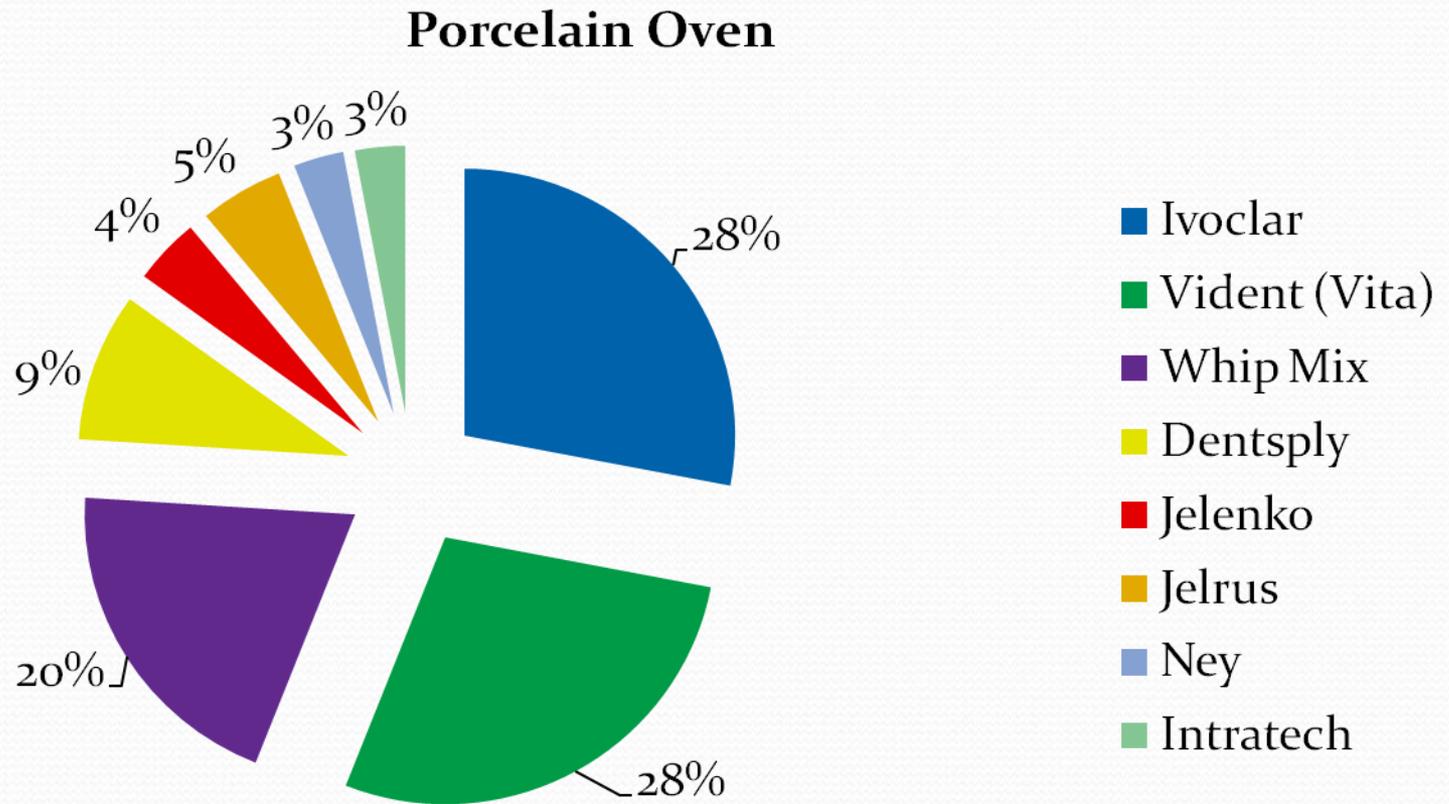
## Model Trimmer



## Porcelain Oven

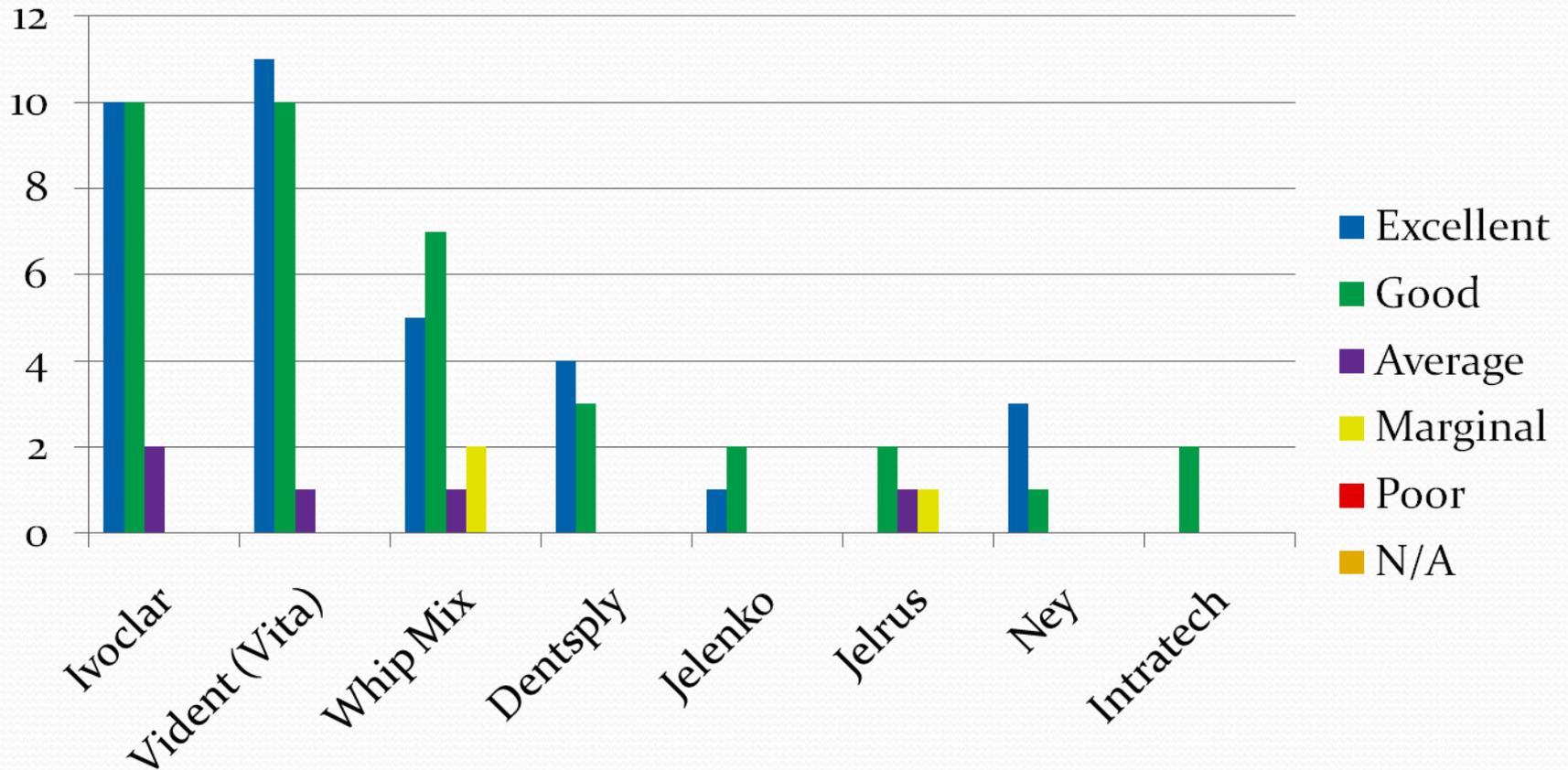
Porcelain ovens are specialized units designed for firing porcelain in the fabrication of crowns and fixed partial dentures. This survey revealed that many labs preferred to use ovens manufactured by Ivoclar 28% and Vident (Vita) 28%. Other companies included Whip Mix 20%, Dentsply 9%, Jelrus 5%, Jelenko 4%, Ney 3% and Intratech 3%. Whip Mix received a negative comment for quality of the touch pad. The majority of evaluators were pleased with their porcelain ovens.

# Market Share by Company



# User Satisfaction

## Porcelain Oven

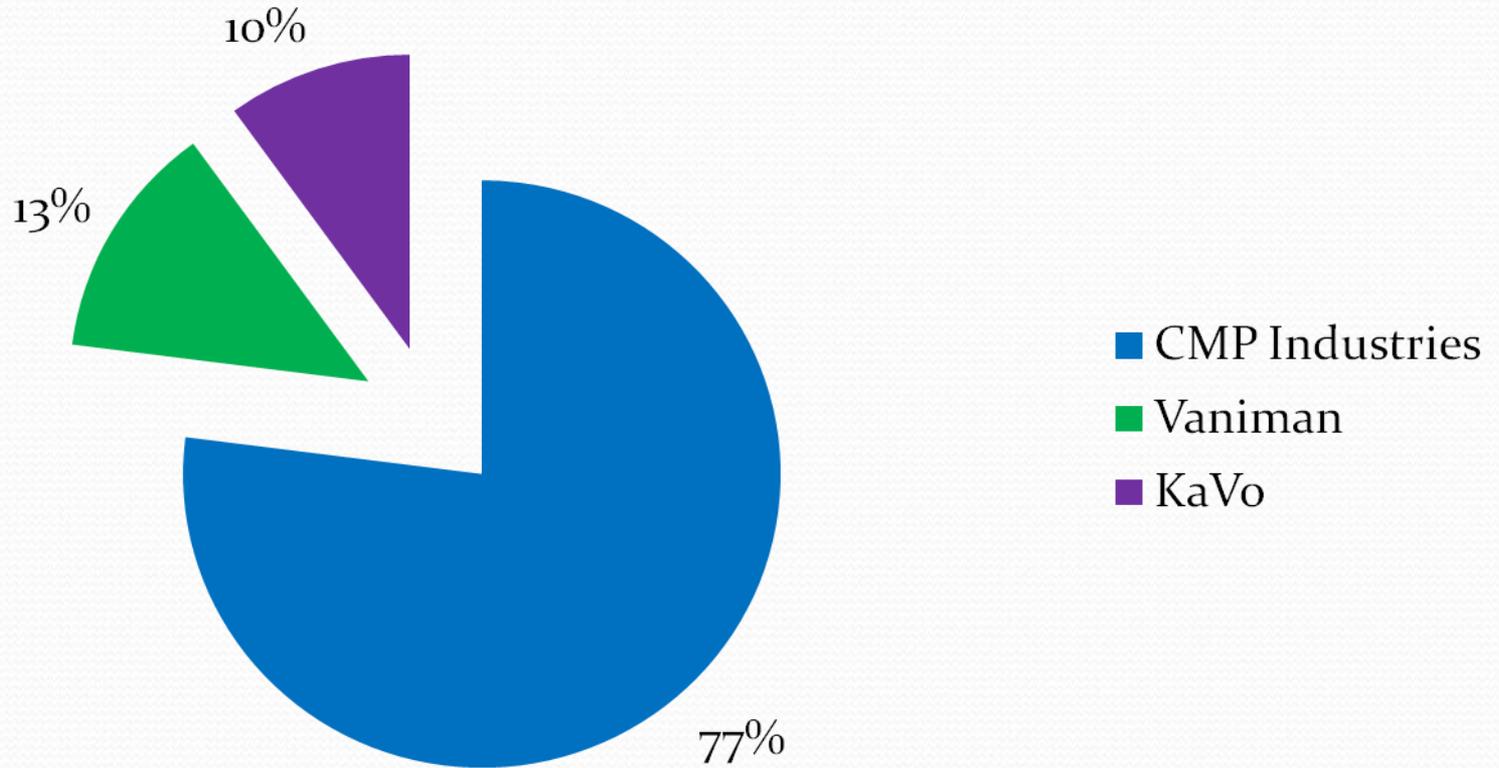


## **Shell Blaster**

Shell blasters are used to remove gypsum products from an acrylic resin prosthesis during the deflasking operation and uses crushed walnut shells as an abrasive. The majority of the labs surveyed used a shell blaster from CMP Industries 77%. The remaining labs reported using shell blasters from Vaniman 13% and KaVo 10%. CMP shell blaster received positive comments for its reliability; no negative comments were noted.

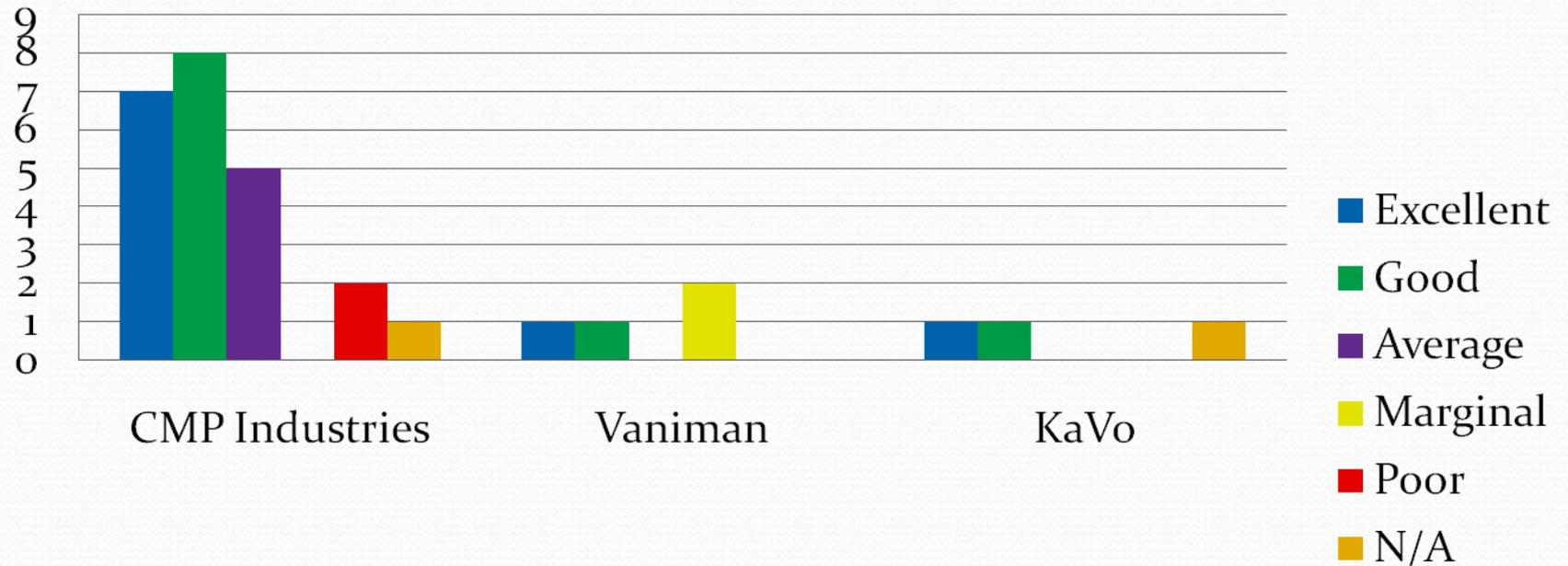
# Market Share by Company

## Shell Blaster



# User Satisfaction

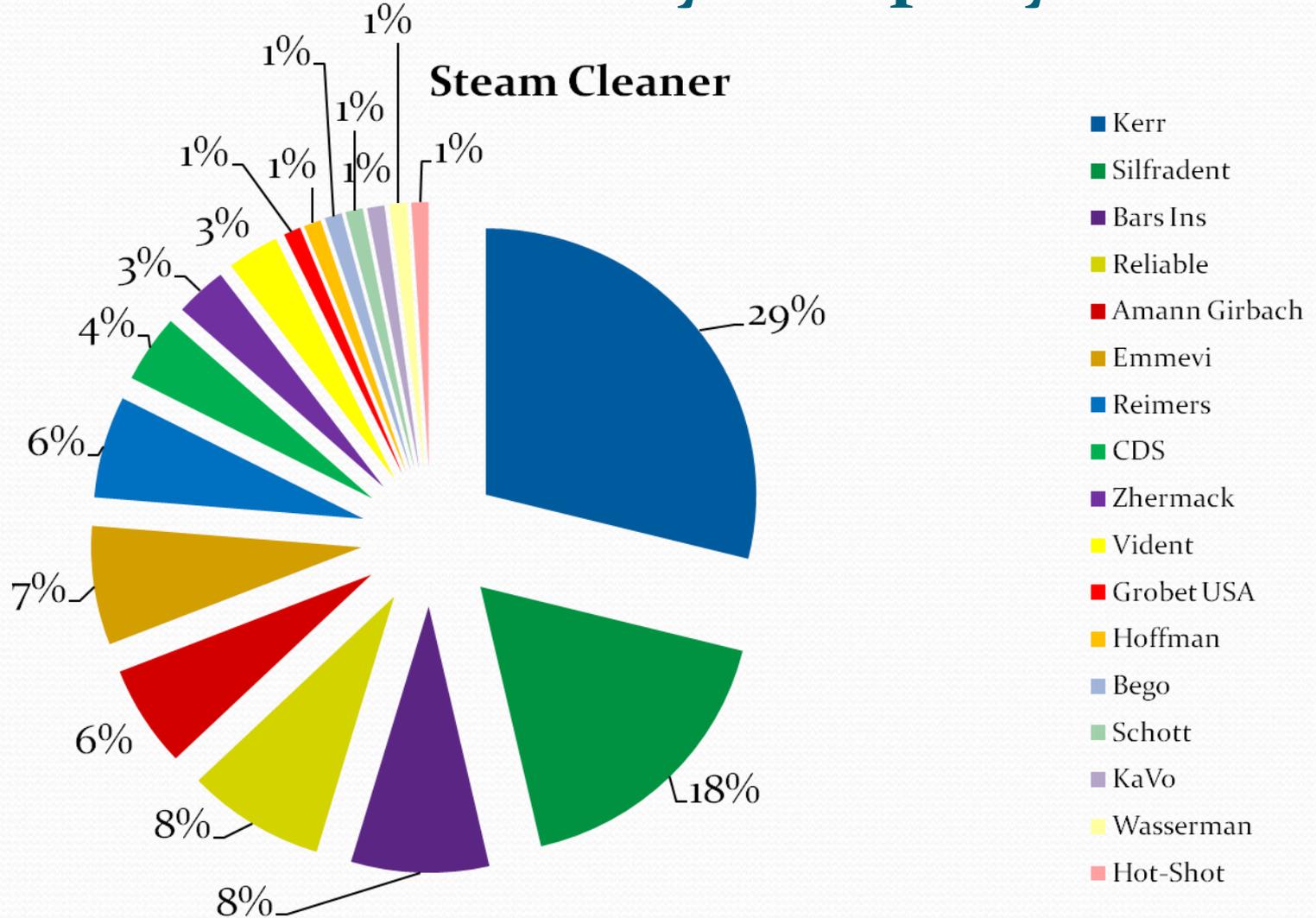
## Shell Blaster



## Steam Cleaner

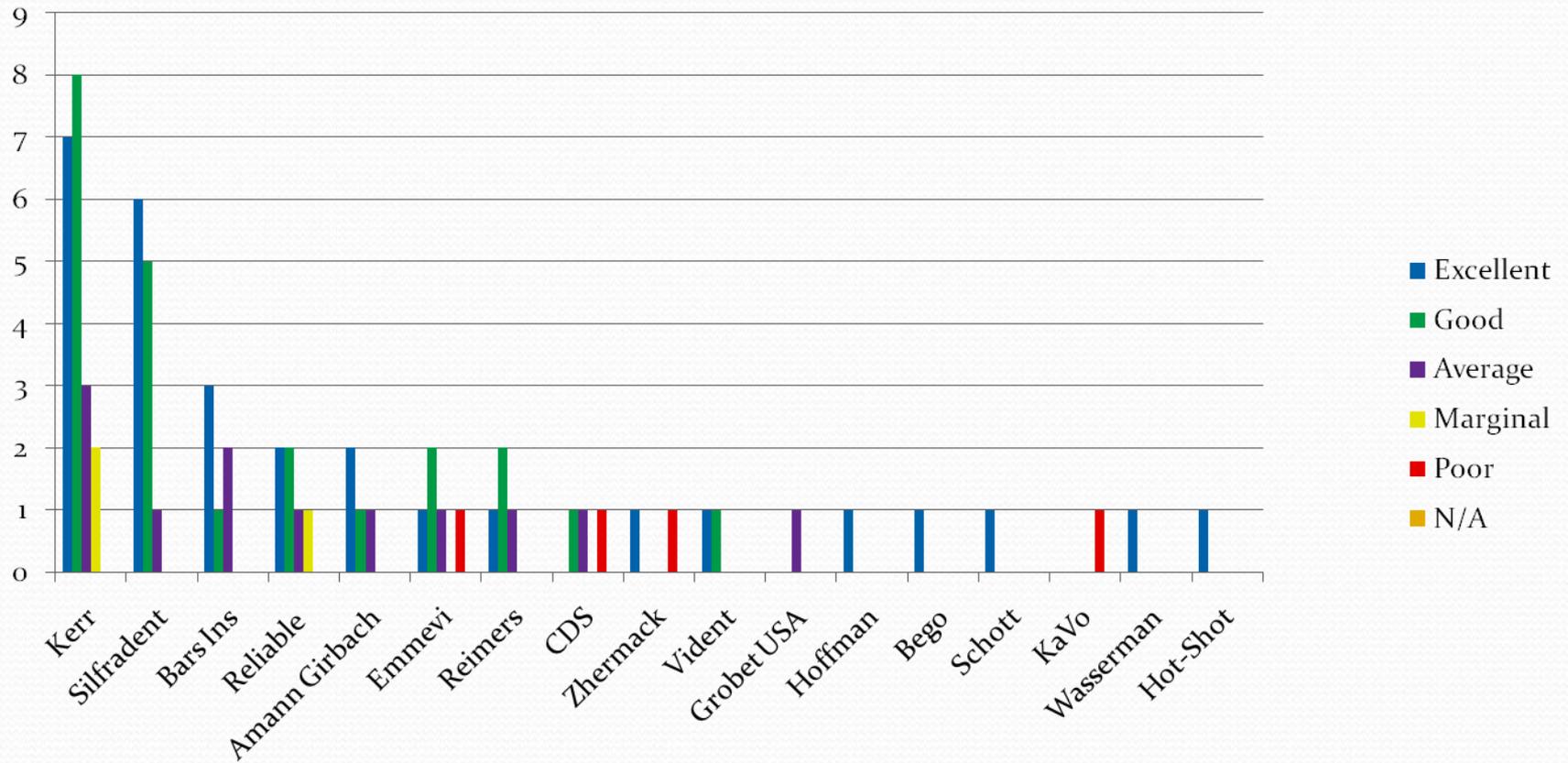
Steam cleaners are designed to clean using pressurized steam and can be used on metal-ceramic frameworks, gold crowns and to remove wax and debris from casts. This survey determined that the largest market share by company is held by Kerr 29% followed by Silfradent 18%, Reliable 8% and Bar Ins 8%. Other models noted were from Emmevi 7%, Amman Girbach 6%, Reimers 6%, CDS 4%, Zhermack 3%, Vident 3%, Grobet USA 1%, Hoffman 1%, Bego 1%, Schott 1%, KaVo 1%, Wasserman 1% and Hot-Shot 1%. Positive comments about the Kerr steam cleaner focused on the unit's reliability. On the negative side an evaluator made a comment about the Kerr steamer requiring excessive maintenance and periodically giving a small shock.

# Market Share by Company



# User Satisfaction

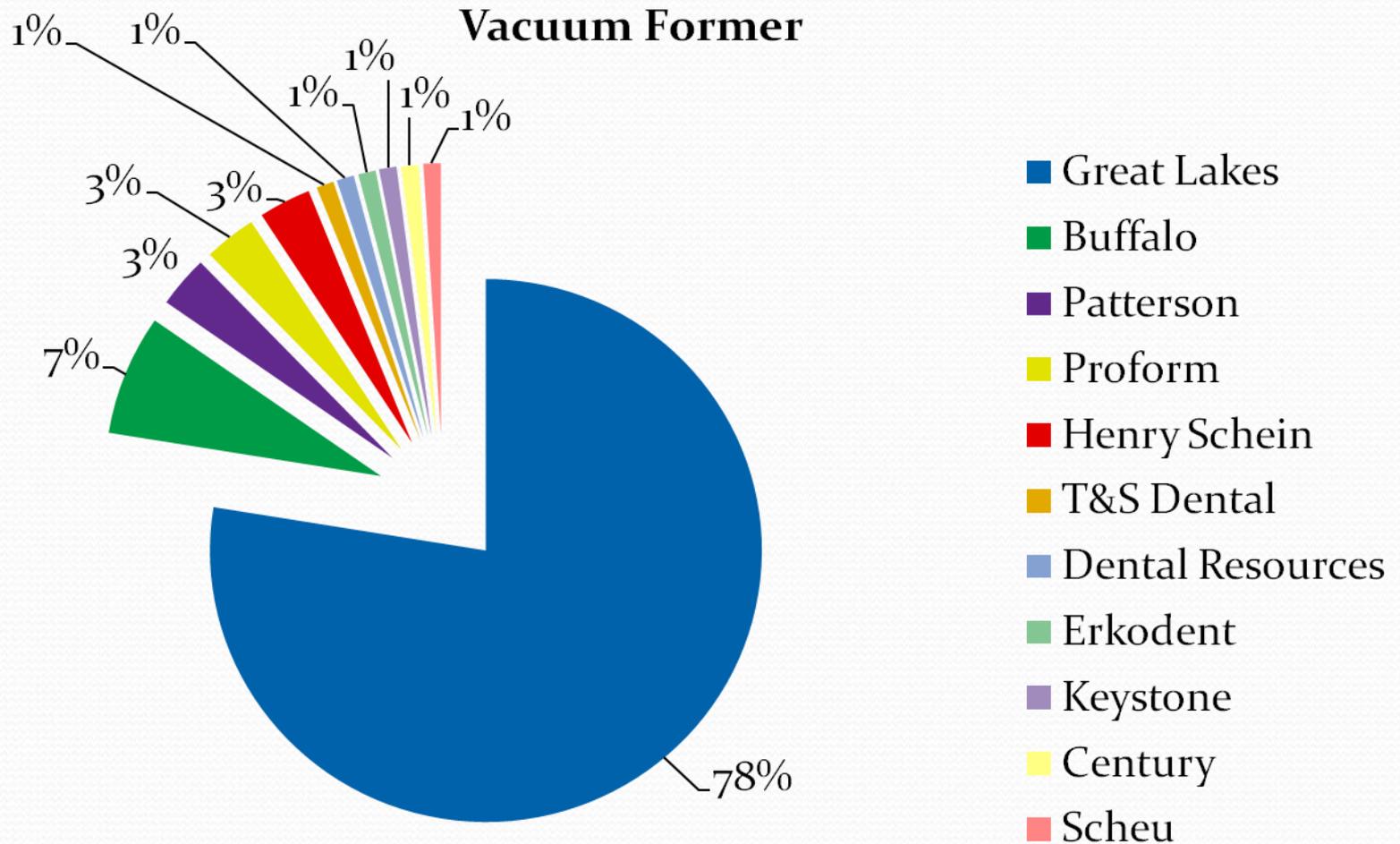
## Steam Cleaner



## **Vacuum Former**

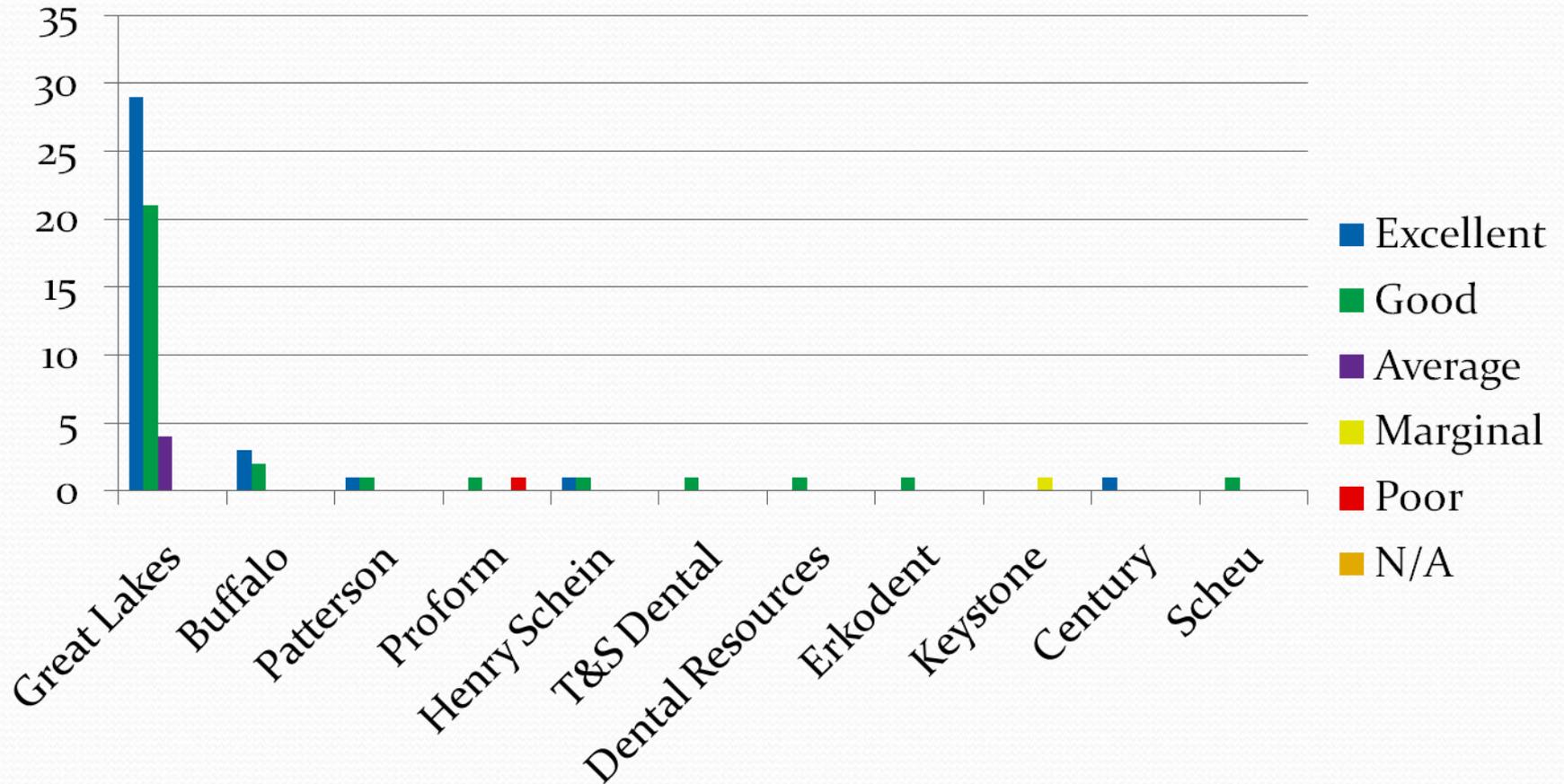
Vacuum formers are used to fabricate several types of dental appliances with precise adaptation by using a vacuum and a heat source. Others, like the GL (Great Lakes) Biostar/Ministar use pressure as a forming system for adaptation. The GL Biostar/Ministar continues to hold a majority of the market share 78%. Other companies reported on this survey included Buffalo 7%, Patterson 3%, Proform 3%, Henry Schein 3%, T&S Dental 1%, Dental Resources 1%, Erkodent 1%, Keystone 1%, Century 1% and Scheu 1%. Positive comments about the Biostar included its durability, adaptation, and ease of use, while negative comments referred to possibly too much pressure breaking casts.

# Market Share by Company



# User Satisfaction

## Vacuum Former

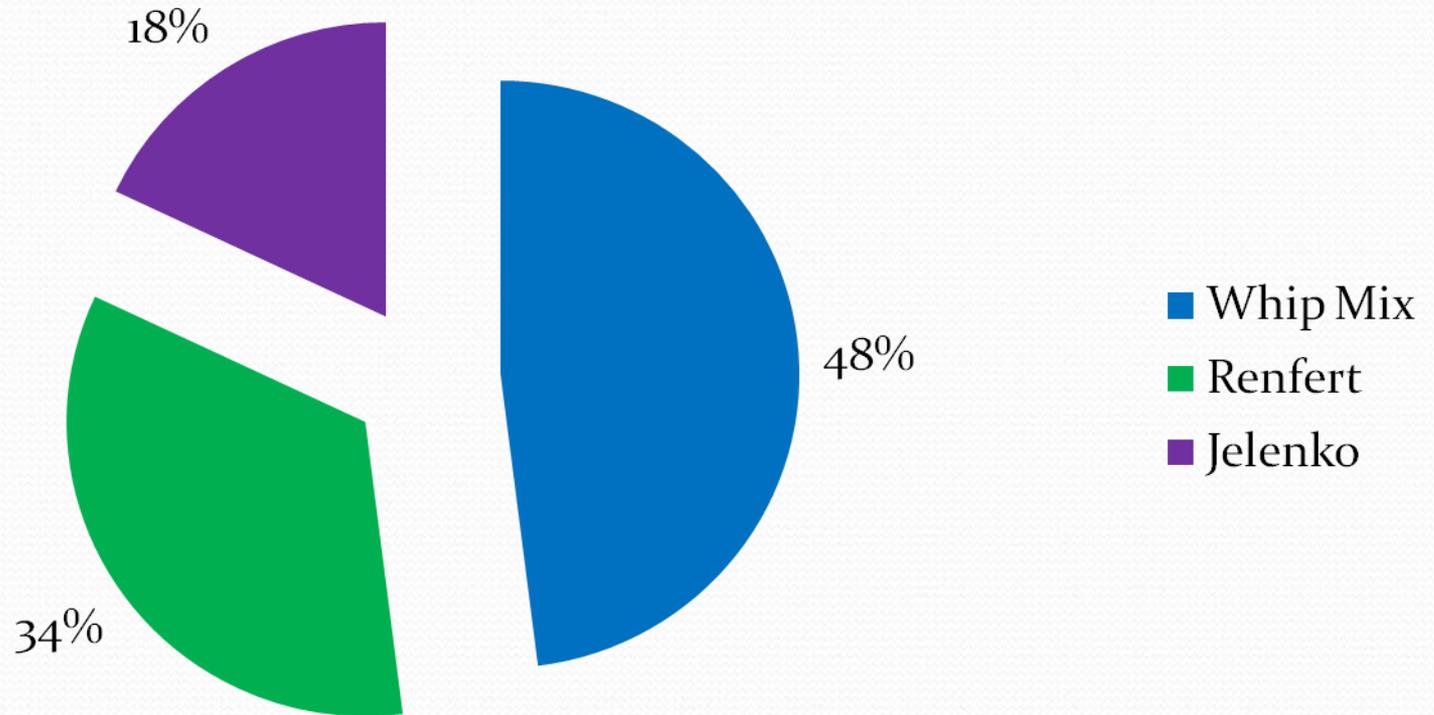


## **Vacuum Mixer**

Vacuum mixers are designed for use with all types of gypsums, investments and alginate. Key features of vacuum mixers are preset programs, vacuum pumps, hands-free mixing and alternate paddle directions. The survey revealed the Whip Mix vacuum mixer held the majority of the market share 48%, followed by Renfert 34% and Jelenko 18%. The Whip Mix vacuum mixers were praised for reliability and ease of use. A negative comment referred to difficulty attaining a seal between the spatula and mixing bowl.

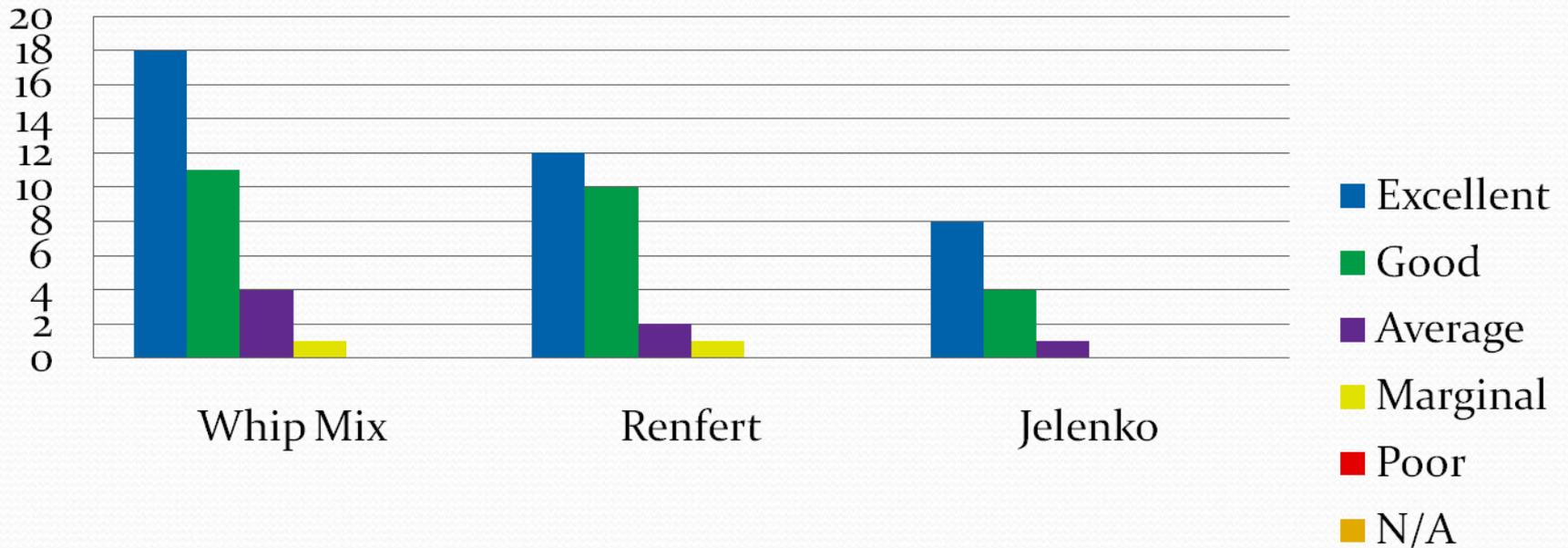
# Market Share by Company

## Vacuum Mixer



# User Satisfaction

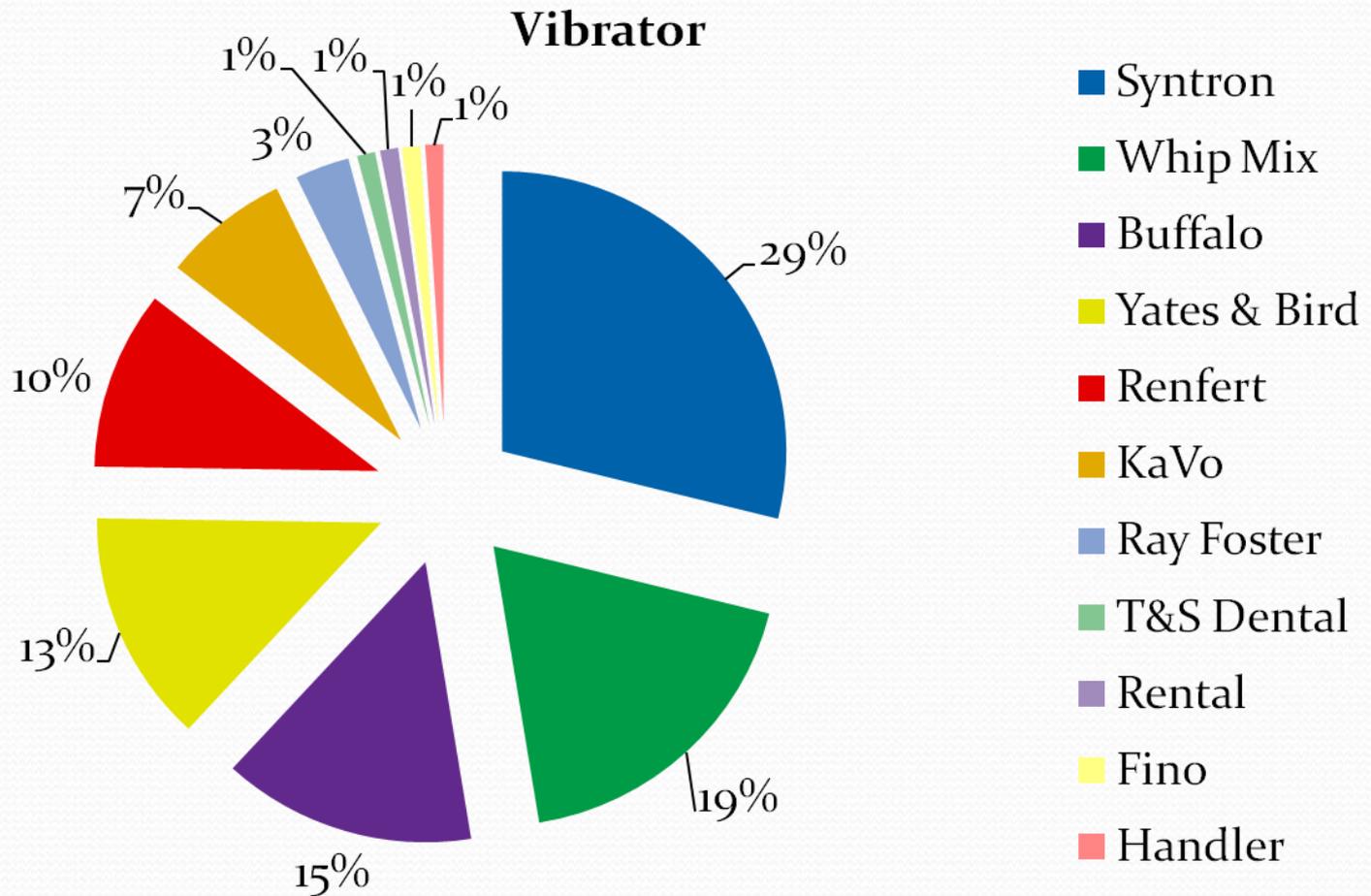
## Vacuum Mixer



## **Vibrator**

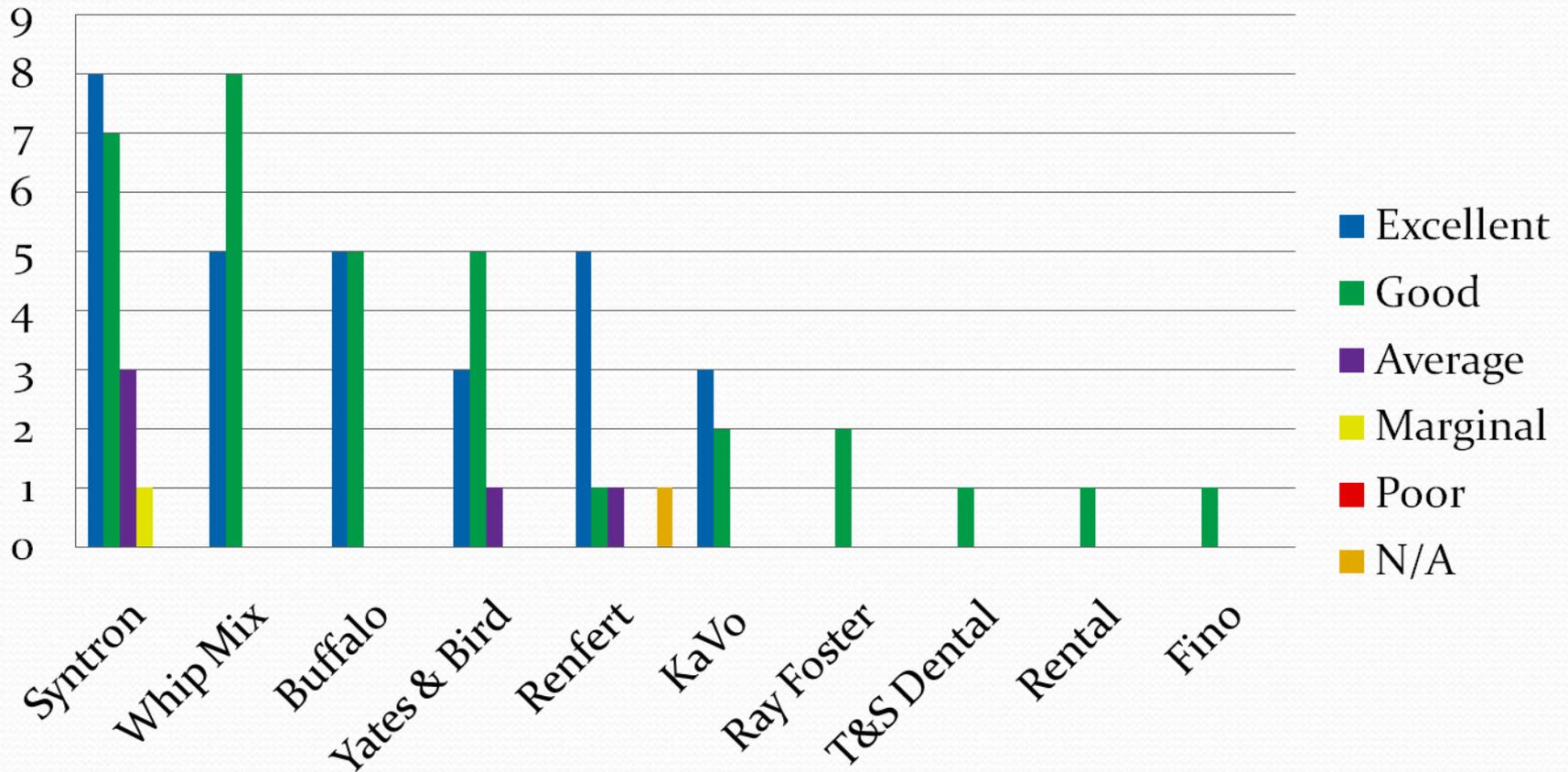
Vibrators are used to get a mix of a gypsum product to move when you pour impressions and perform various investing procedures. They are also used to increase the density of the mix by eliminating air through vibration. A rheostat control is used to adjust the intensity of the vibration from a gentle agitation to a vigorous shaking. The intensity of the vibration is directly proportional to the viscosity of the mix. The survey indicated that many labs used a vibrator manufactured by Syntron 29%. Other popular companies were Whip Mix 19%, Buffalo 15%, followed by Yates & Bird 13%, Renfert 10%, KaVo 7%, Ray Foster 3%, T&S Dental 1%, Rental 1% Handler 1% and Fino 1%. There were no negative or positive comments provided.

# Market Share by Company



# User Satisfaction

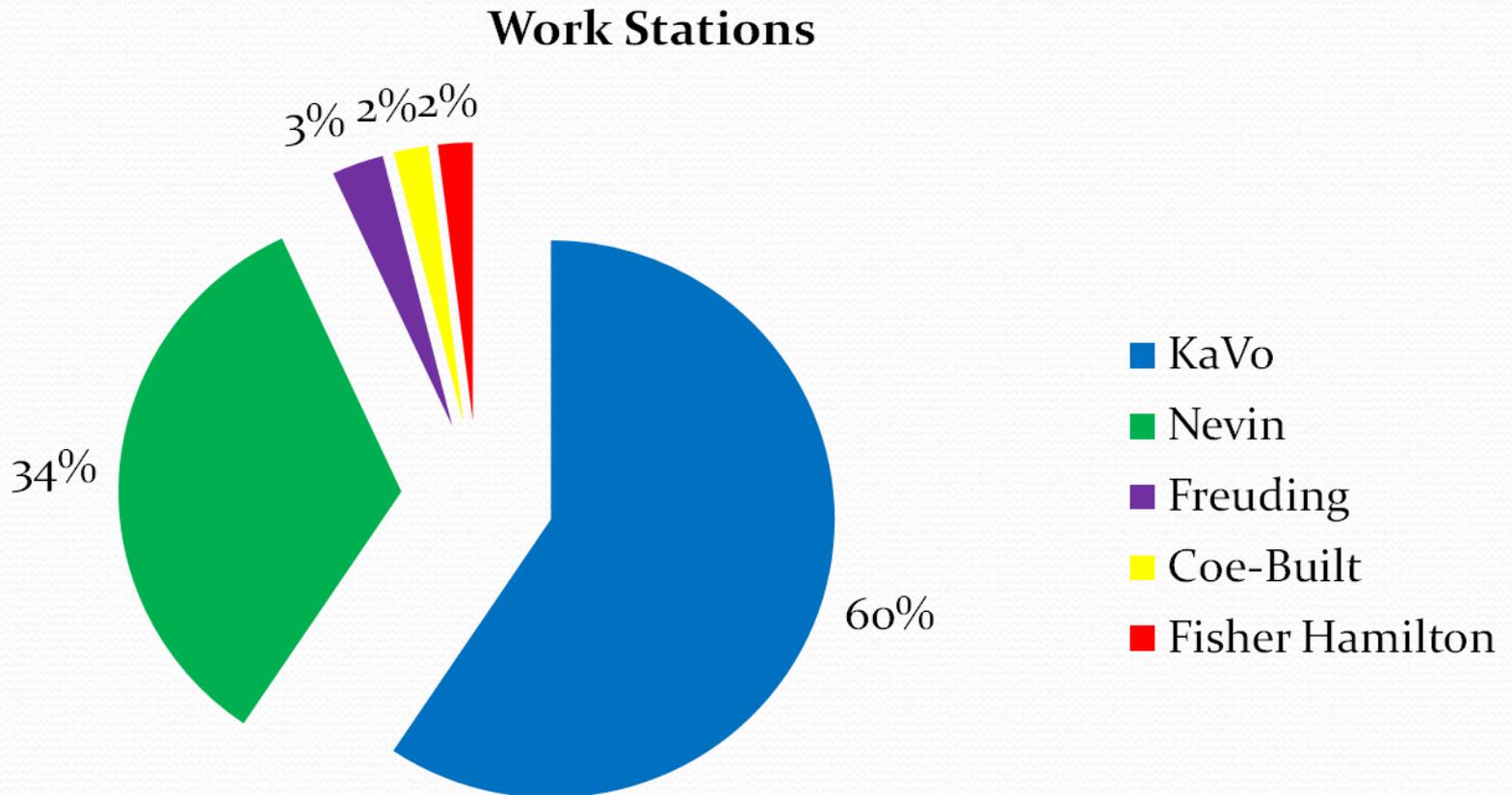
## Vibrator



## Work Stations

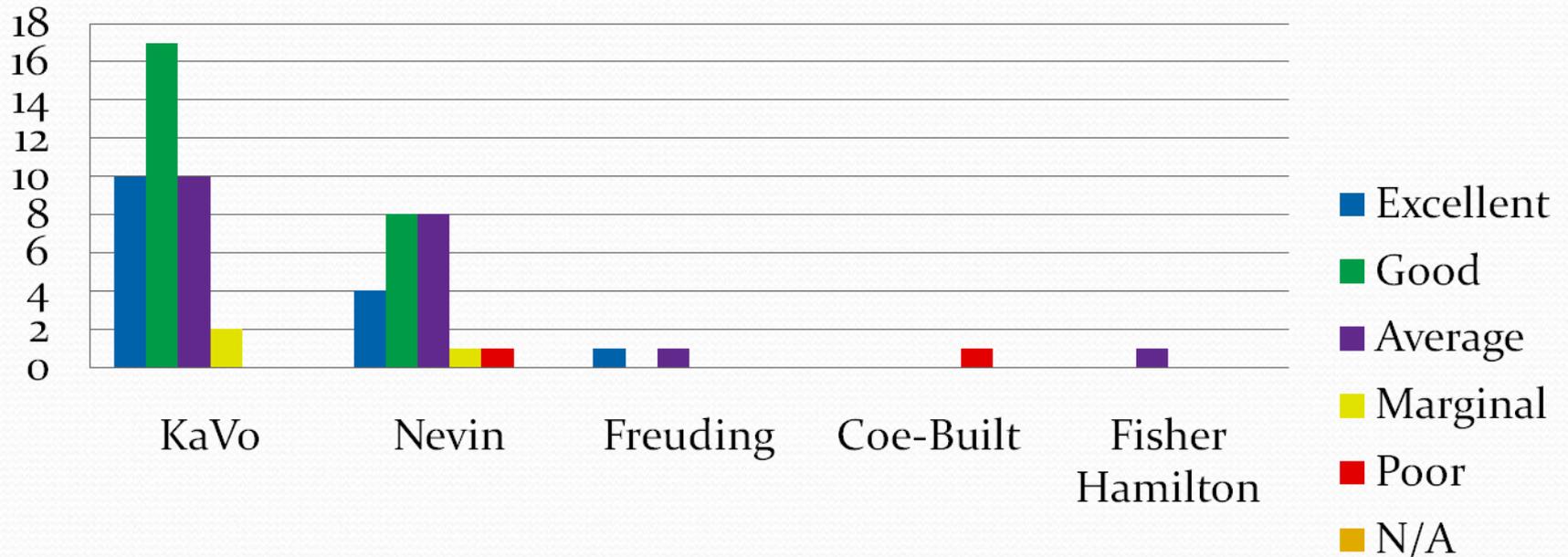
Work stations should be designed to provide technician support and comfort while providing ample workspace. Work stations are designed for single or multi-station use that can be adapted to accommodate left-or-right handed technicians. This USAF survey revealed that KaVo 60% and Nevin 34% had the majority of market share. Other work stations included Freudling 3%, Coe-Built 2% and Fisher Hamilton 2%. The most popular work station, KaVo received positive comments for its work station design and comfort. The majority of the negative comments referred to the poor suction system. Nevin received mixed reviews as well.

# Market Share by Company



# User Satisfaction

## Work Stations

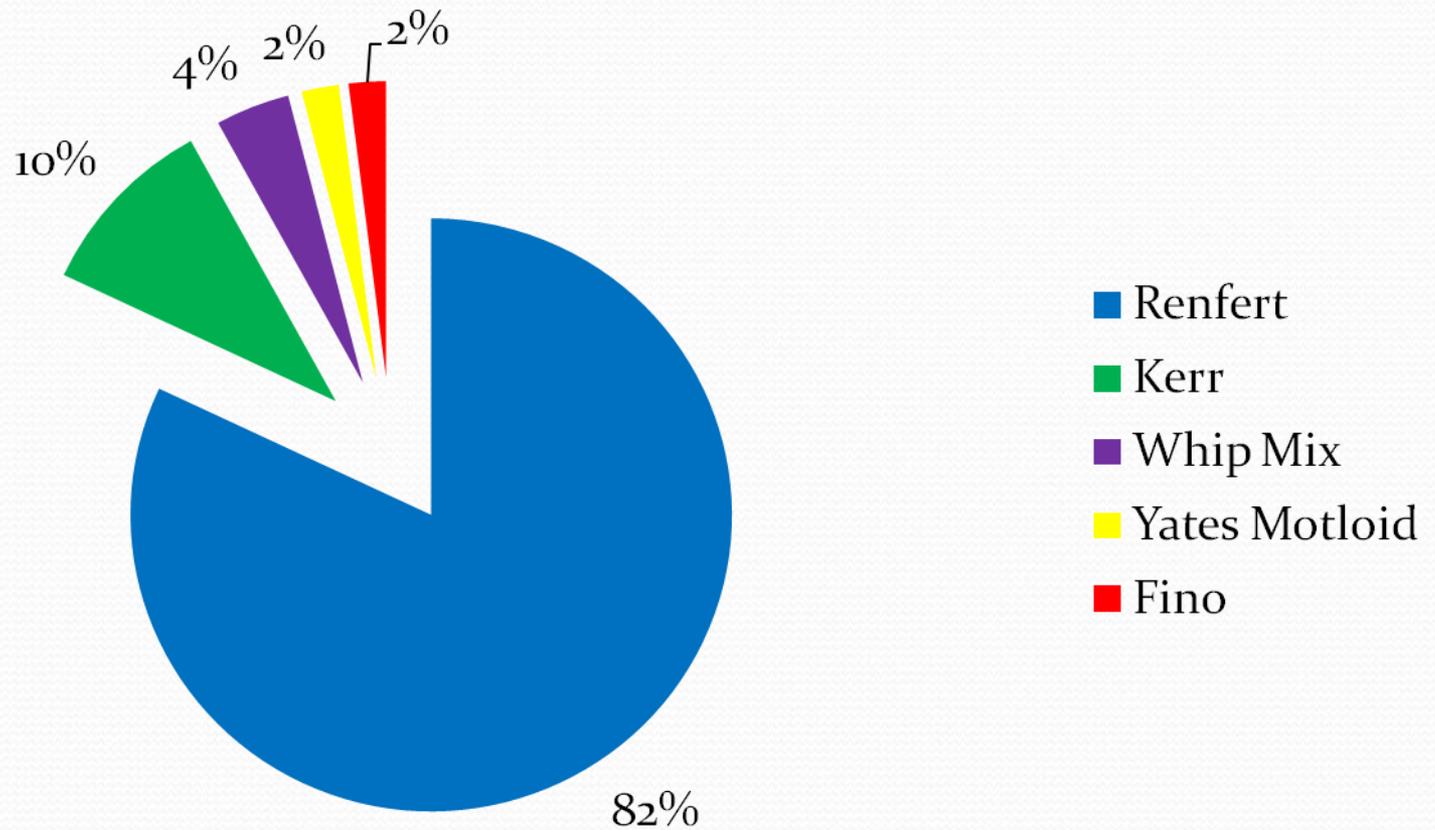


## **Wax Dipping Pot**

Wax dipping pots are used to increase a crown & bridge technicians production by dipping the stone die into molten wax to produce a coping. Wax pots are designed to heat and maintain wax at a specified temperature. Our survey revealed the majority of the labs 82% have Renfert wax dipping pots. Kerr 10%, Whip Mix 4%, Yates Motloid 2% and Fino 2%. No positive or negative comments of significance were noted.

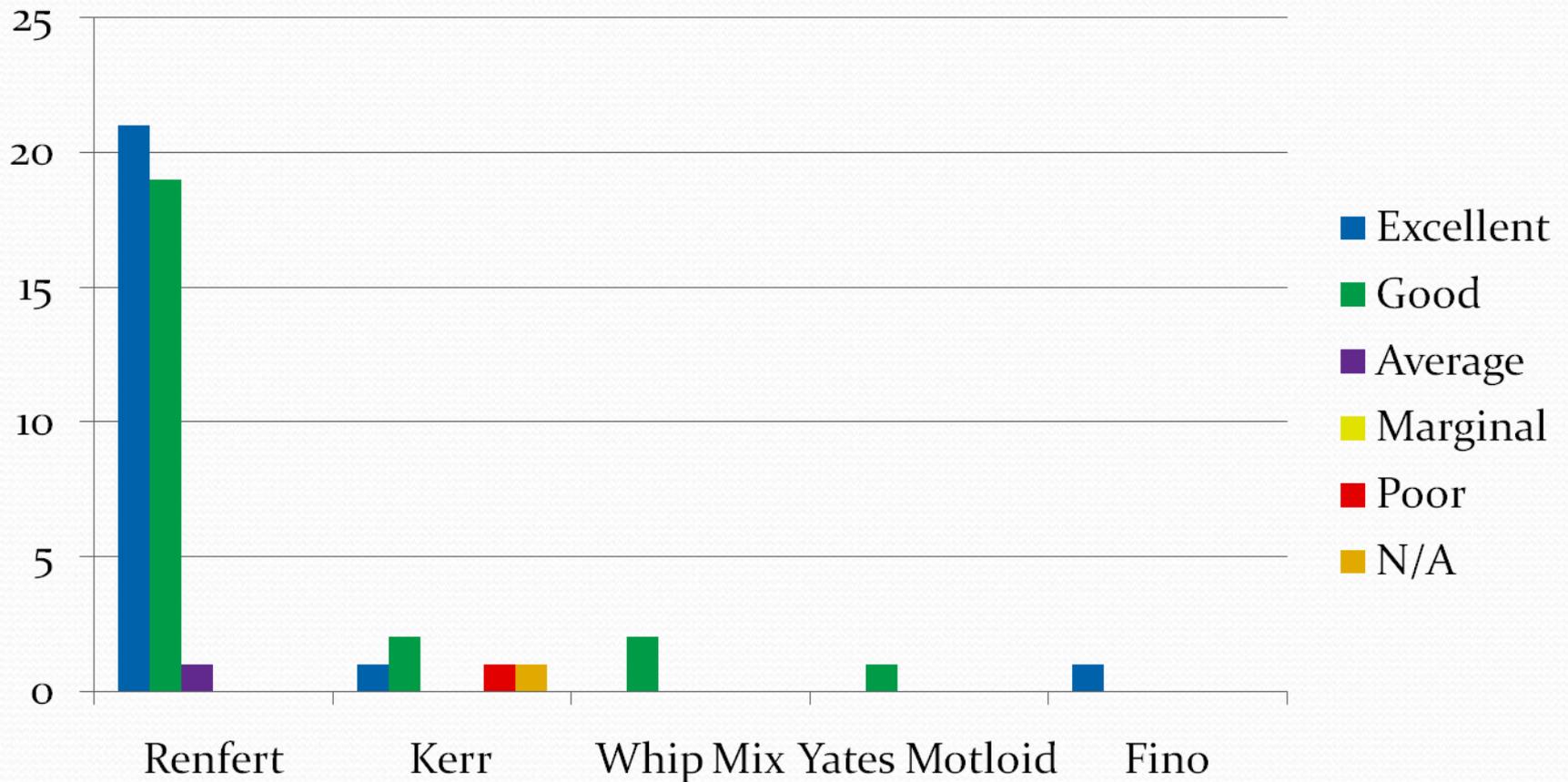
# Market Share by Company

## Wax Dipping Pot



# User Satisfaction

## Wax Dipping Pot

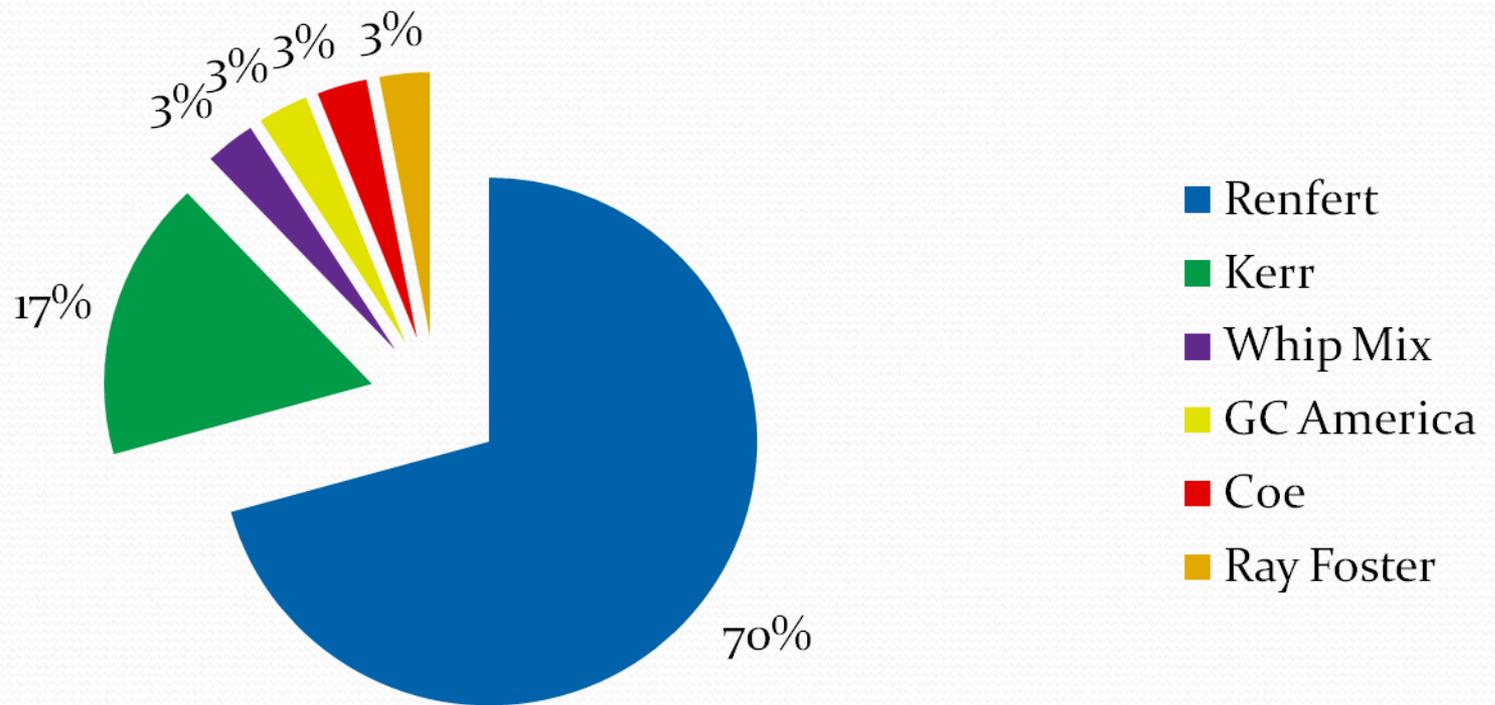


## **Wax Pot (fixed)**

Wax pots are designed to heat and maintain wax at a specified temperature. Wax pots for crown & bridge tend to have multiple wells for different types of waxes. The survey indicated that the majority of labs used wax pots manufactured by Renfert 70%. Other popular companies are Kerr 17%, Whip Mix 3%, GC America 3%, Ray Foster 3 % and Coe 3%. No positive or negative comments were submitted.

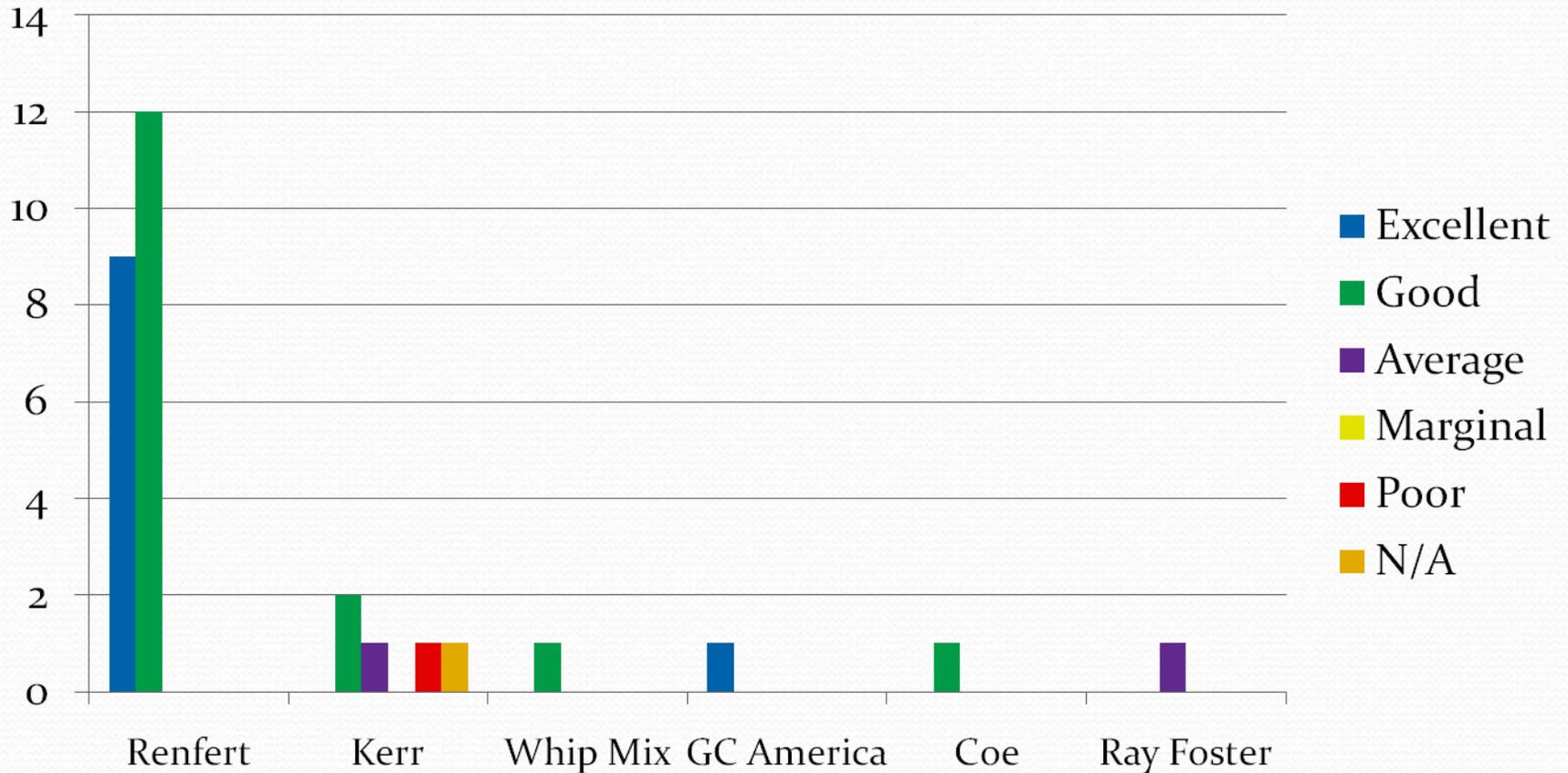
# Market Share by Company

Wax Pot (fixed)



# User Satisfaction

## Wax Pot (fixed)

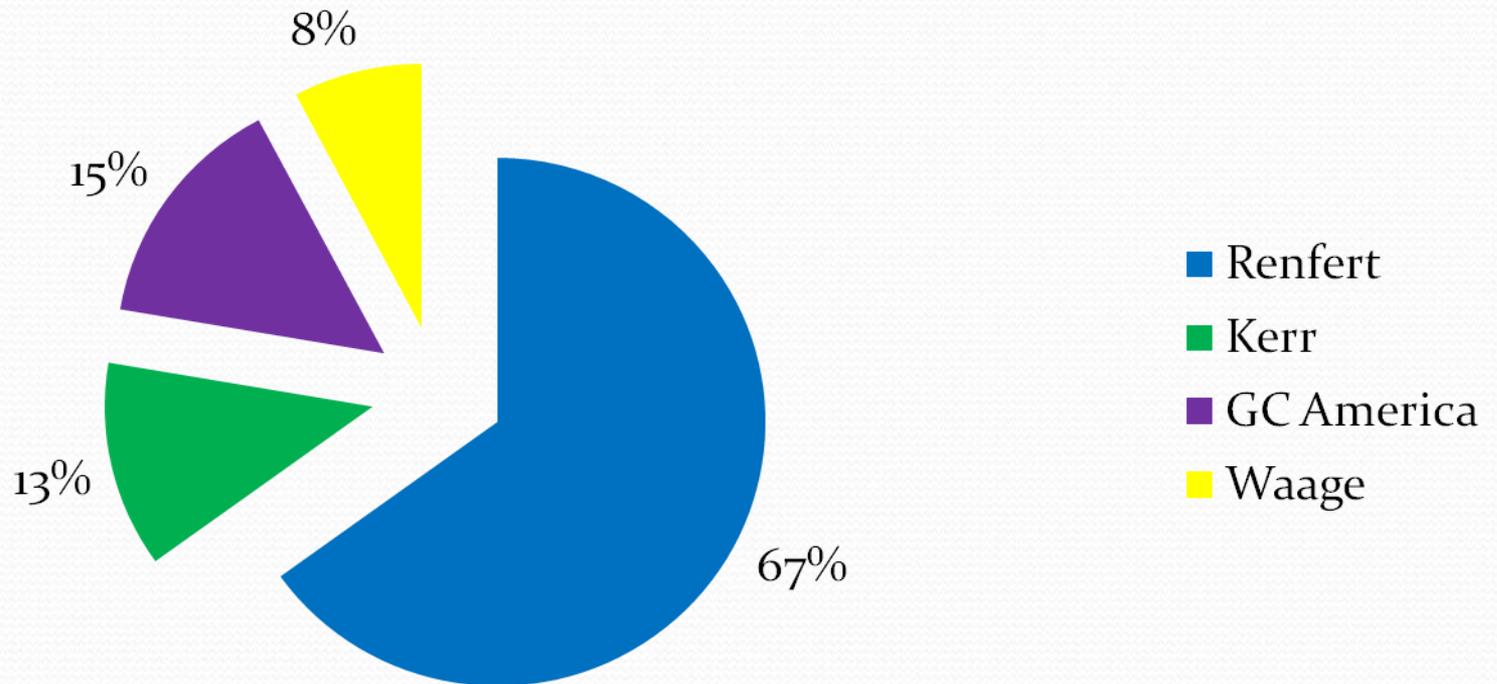


## **Wax Pot (removable)**

Wax pots are designed to heat and maintain wax at a specified temperature. Wax pots for removable prosthodontics tend to have a single well for a large quantity of baseplate or similar type of wax. Our survey revealed the majority of the labs 67% have a Renfert wax pot followed by Kerr 13%, GC America 13% and Waage 7%. No additional comments were provided.

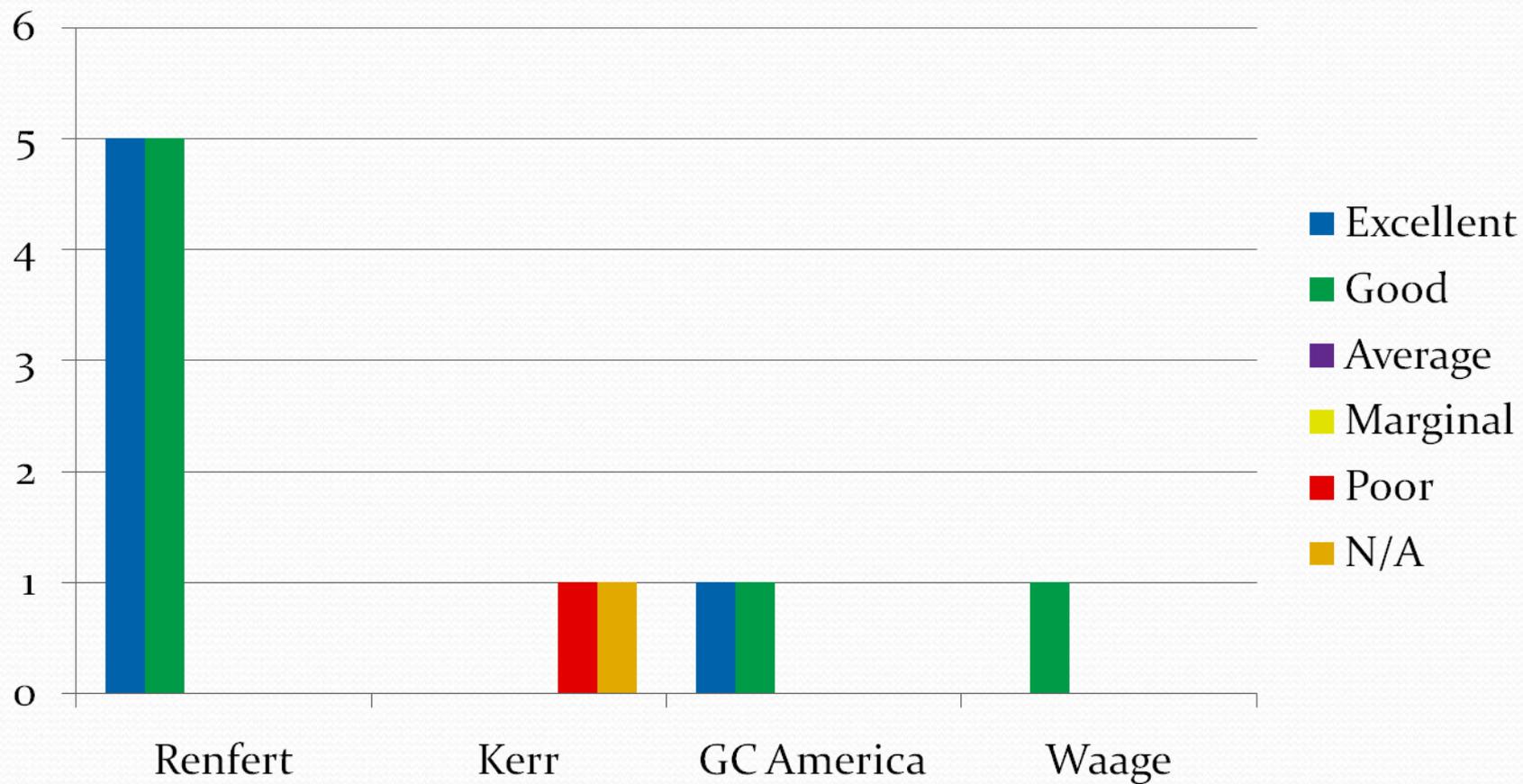
# Market Share by Company

Wax Pot (removable)



# User Satisfaction

## Wax Pot (removable)

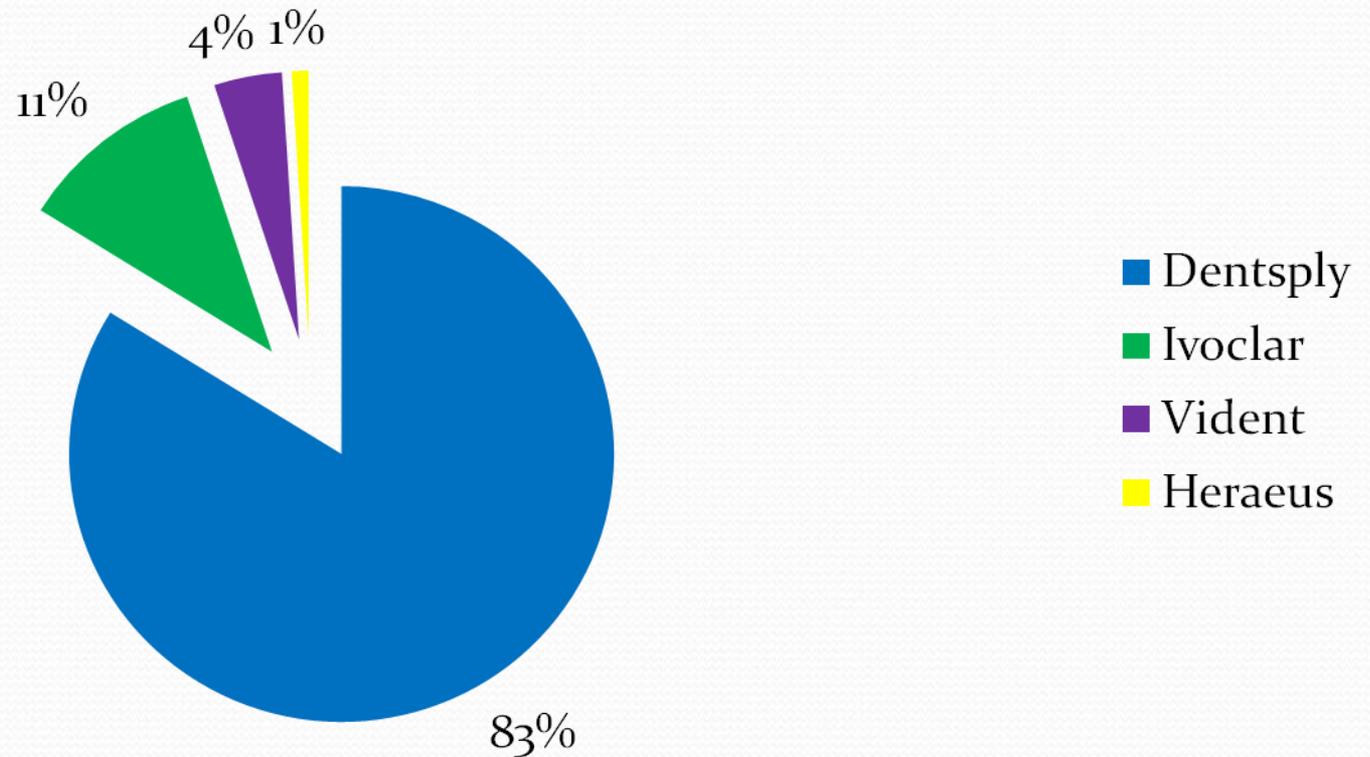


## Acrylic Denture Teeth

Acrylic denture teeth are manufactured in many different shapes, sizes, and shades. A denture tooth stock management system should be established to order and stock the teeth based on local usage. Our survey revealed the majority of AF labs 83% have teeth manufactured by Dentsply followed by Ivoclar 11%, Vident 4%, and Heraeus 1%. Overall the majority of USAF bases were satisfied with their denture teeth.

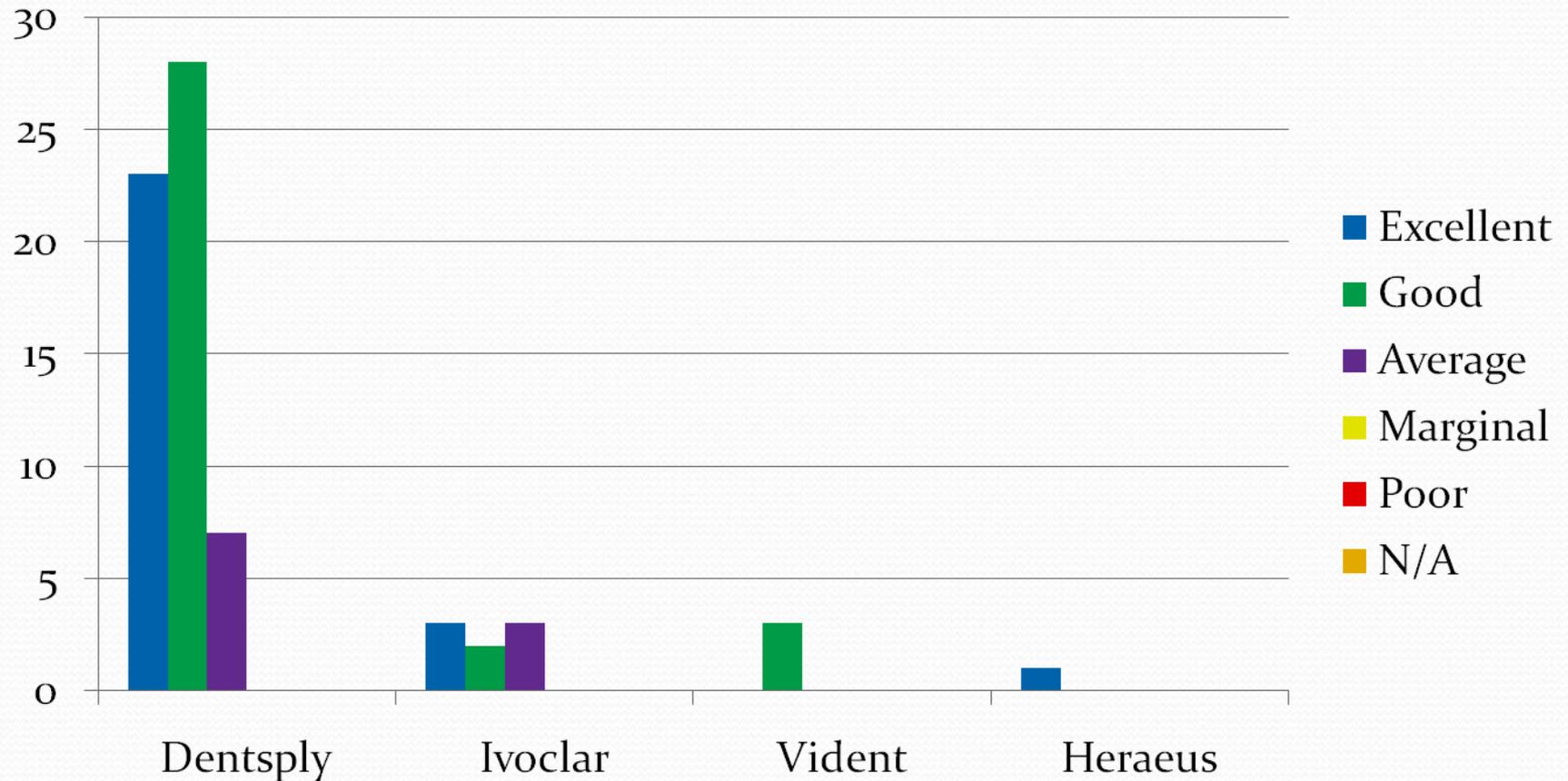
# Market Share by Company

## Acrylic Denture Teeth



# User Satisfaction

## Acrylic Denture Teeth

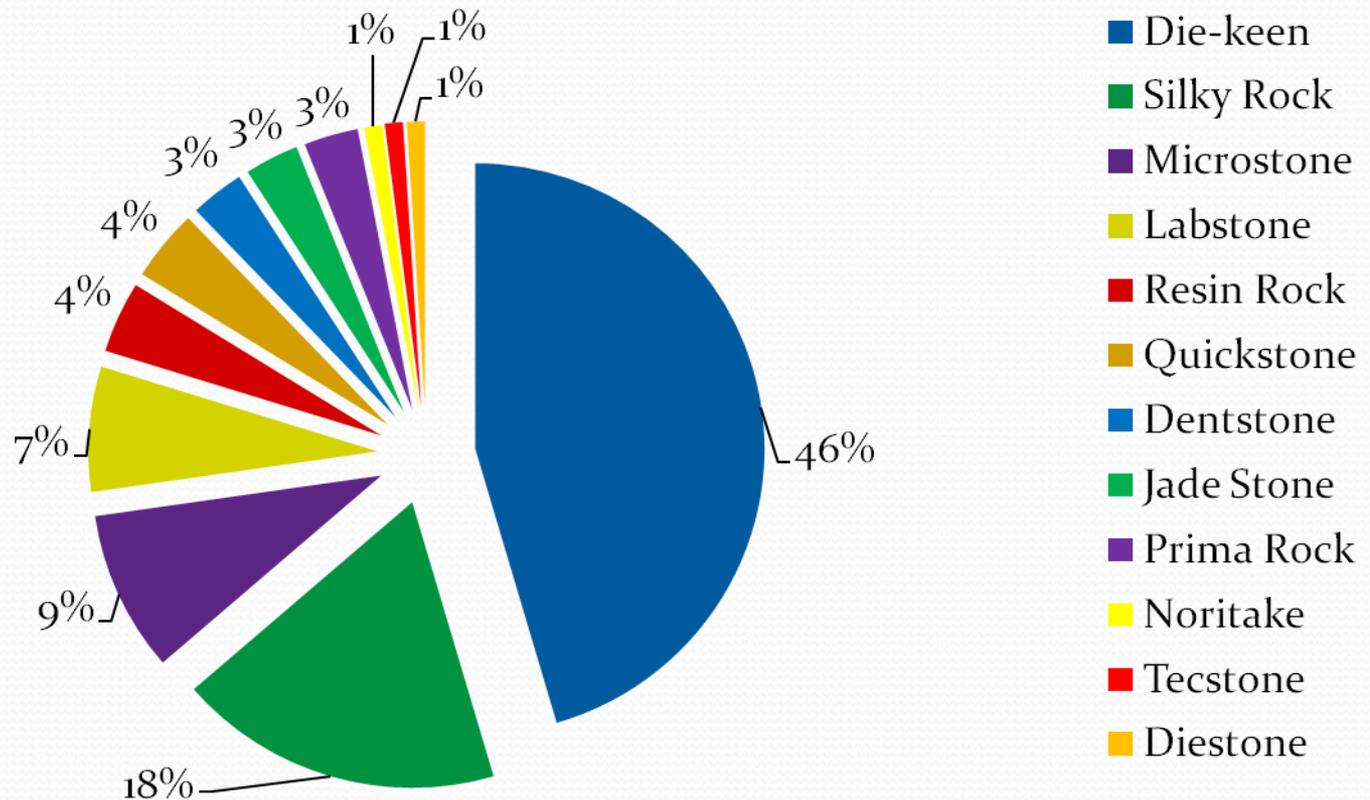


## **Dental Stone (diagnostic)**

Dental stone is medium strength plaster that is stronger and more resistant to abrasion. It is used primarily for casts (such as diagnostic casts), opposing arch casts, and complete and partial denture working casts. Our survey revealed that many USAF labs 46% use Die-keen. Other popular brands included Silky Rock 18%, Microstone 9%, Labstone 7%, Resin Rock 4%, Quickstone 4%, Dentstone 3%, Jade Stone 3%, Prima Rock 3%, Noritake 1%, Tecstone 1% and Diestone 1%. Overall the majority of users were satisfied with their dental stone.

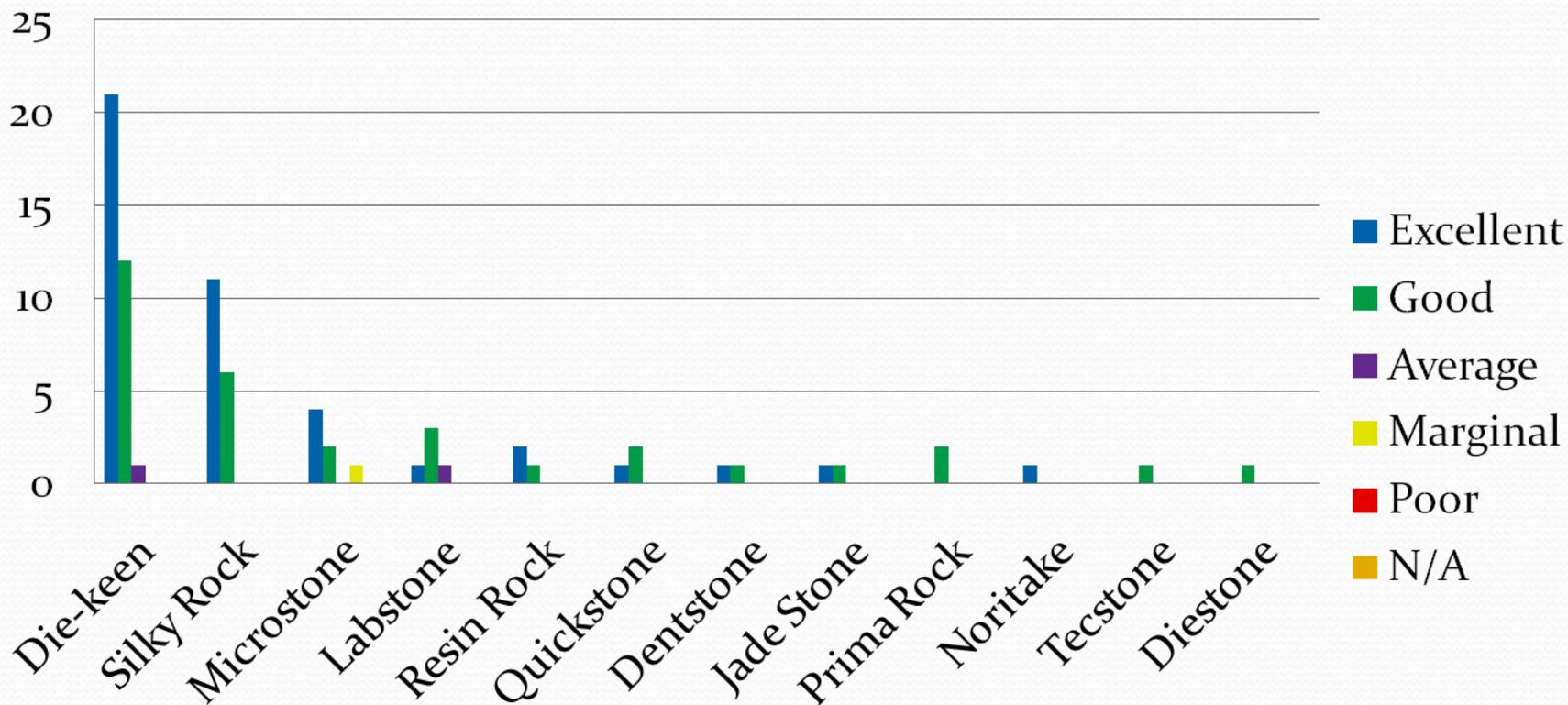
# Market Share by Company

## Dental Stone (diagnostic)



# User Satisfaction

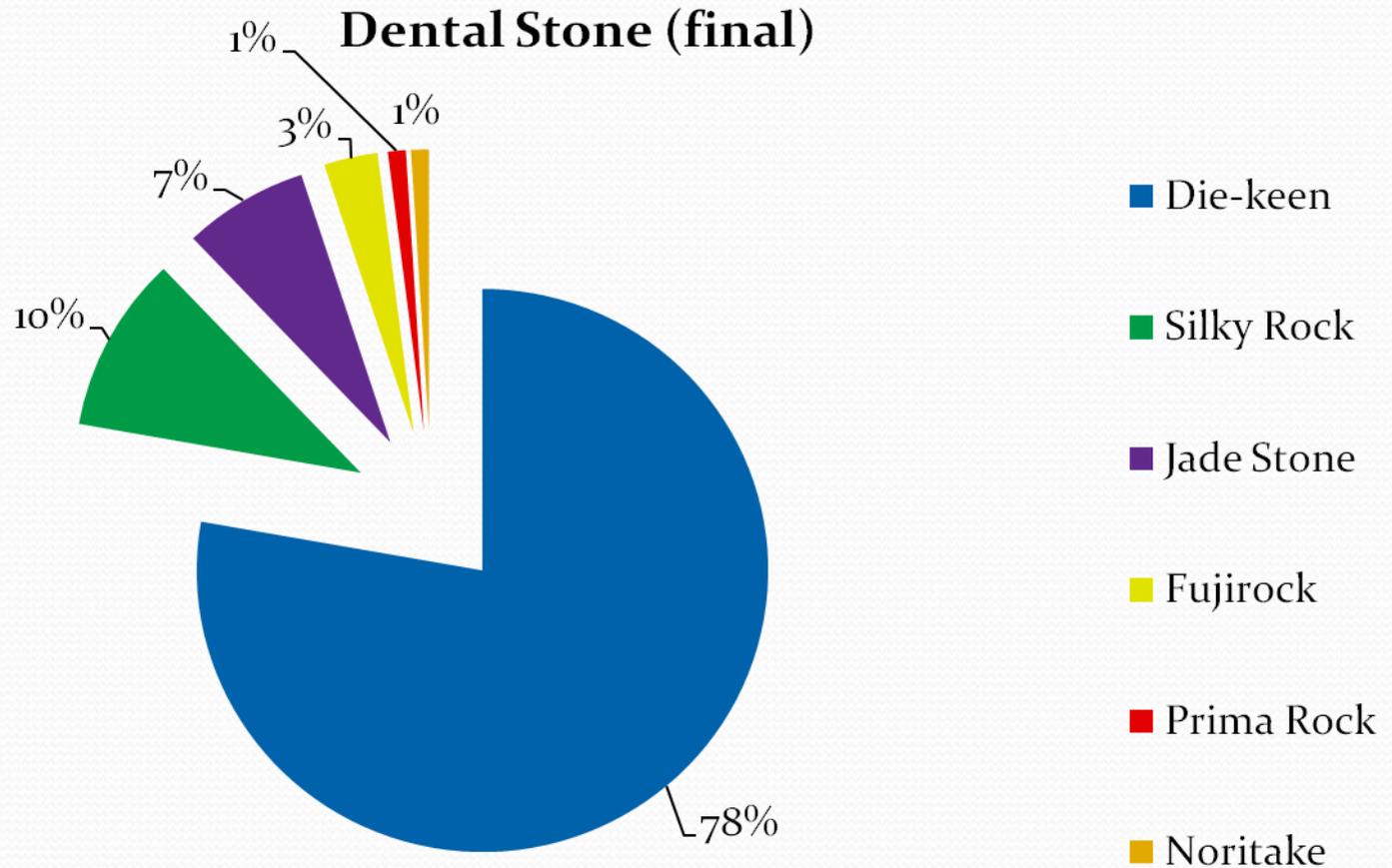
## Dental Stone (diagnostic)



## **Dental Stone (final)**

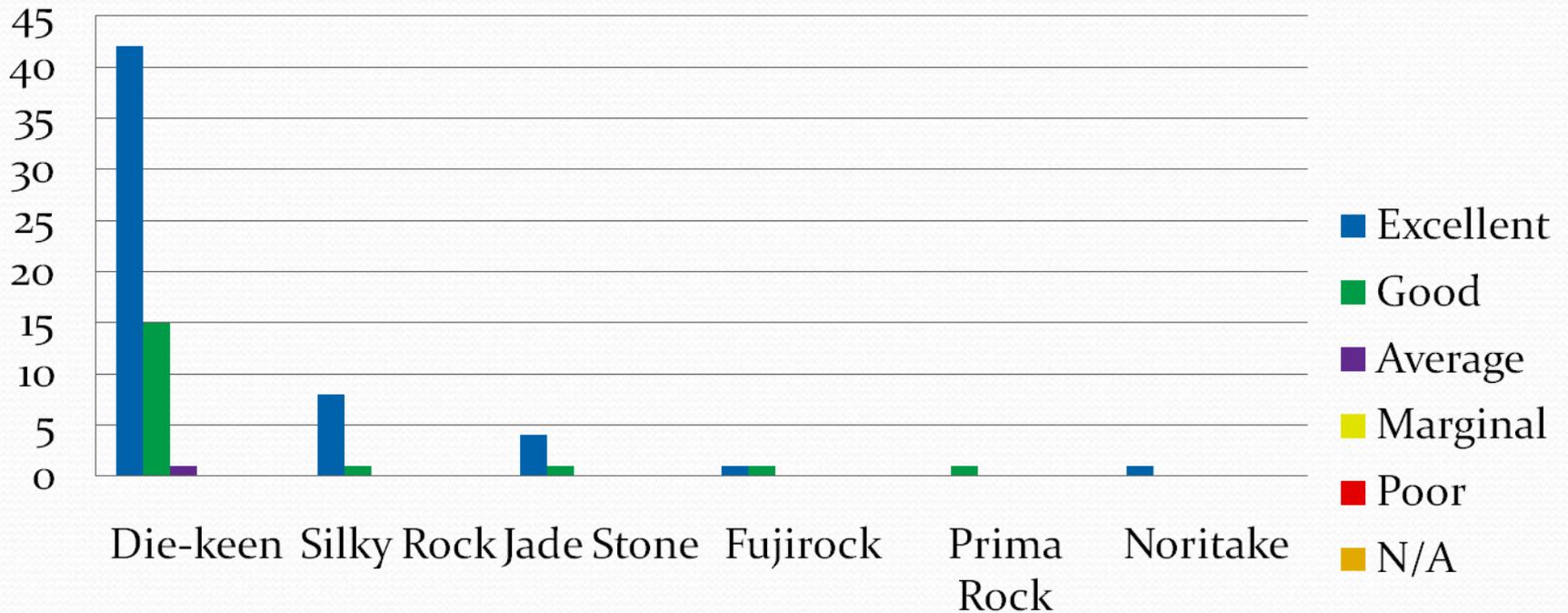
Die stones are specially processed forms of gypsum products used to make crown, onlay, and inlay dies. They are harder, more dense than dental stone, and have a 0.08 to 0.18% setting expansion. Our survey revealed the majority of the labs 78% use Die-keen for final impressions. Other products used included Silky Rock 12%, Jade Stone 7%, Fujirock 3%, Prima Rock 1% and Noritake 1%. No positive or negative additional comments were provided.

# Market Share by Company



# User Satisfaction

## Dental Stone (final)

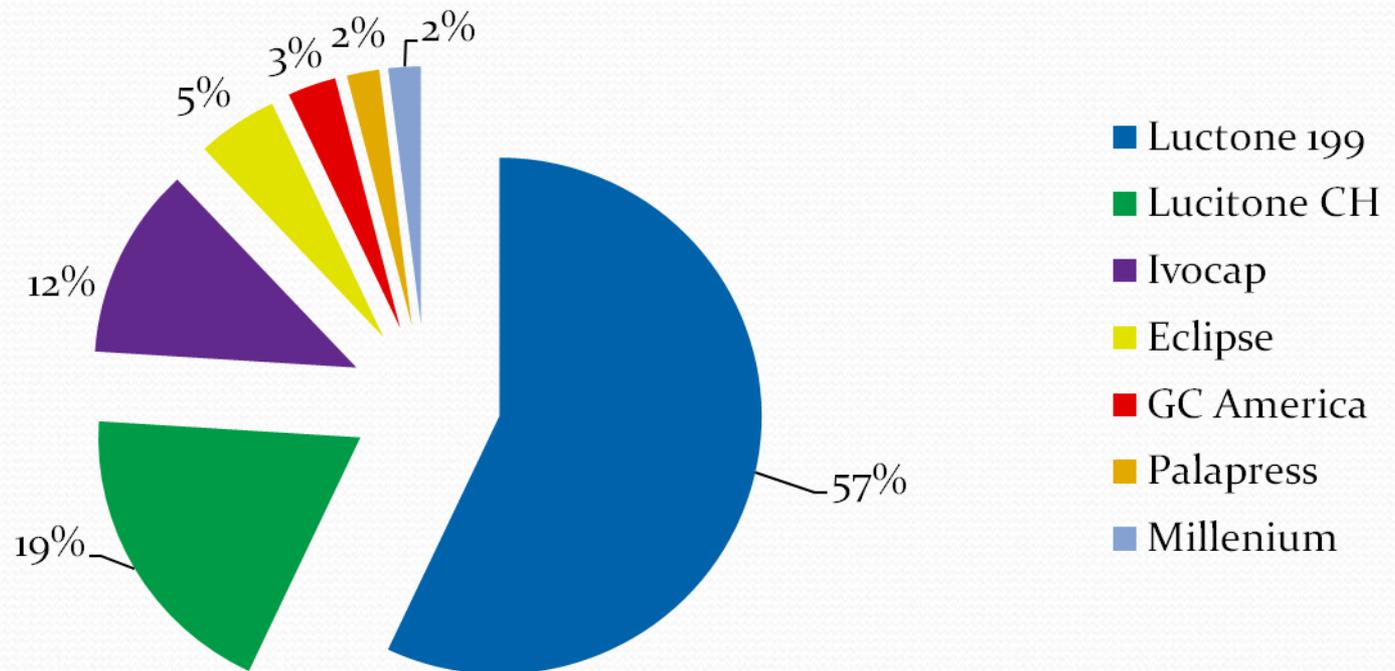


## **Denture Resin**

Over the years a wide variety of materials have been used to make denture bases. Today, a plastic material is by far the most universally used. The chemical name is methyl methacrylate, commonly known as acrylic resin. Our survey revealed the majority of the labs 57% use Lucitone 199 denture resin followed by Characterized Lucitone 19%, Ivocap 12%, Eclipse 5%, GC America 3%, Palapress 2% and Millennium 2%. No positive or negative additional comments were provided.

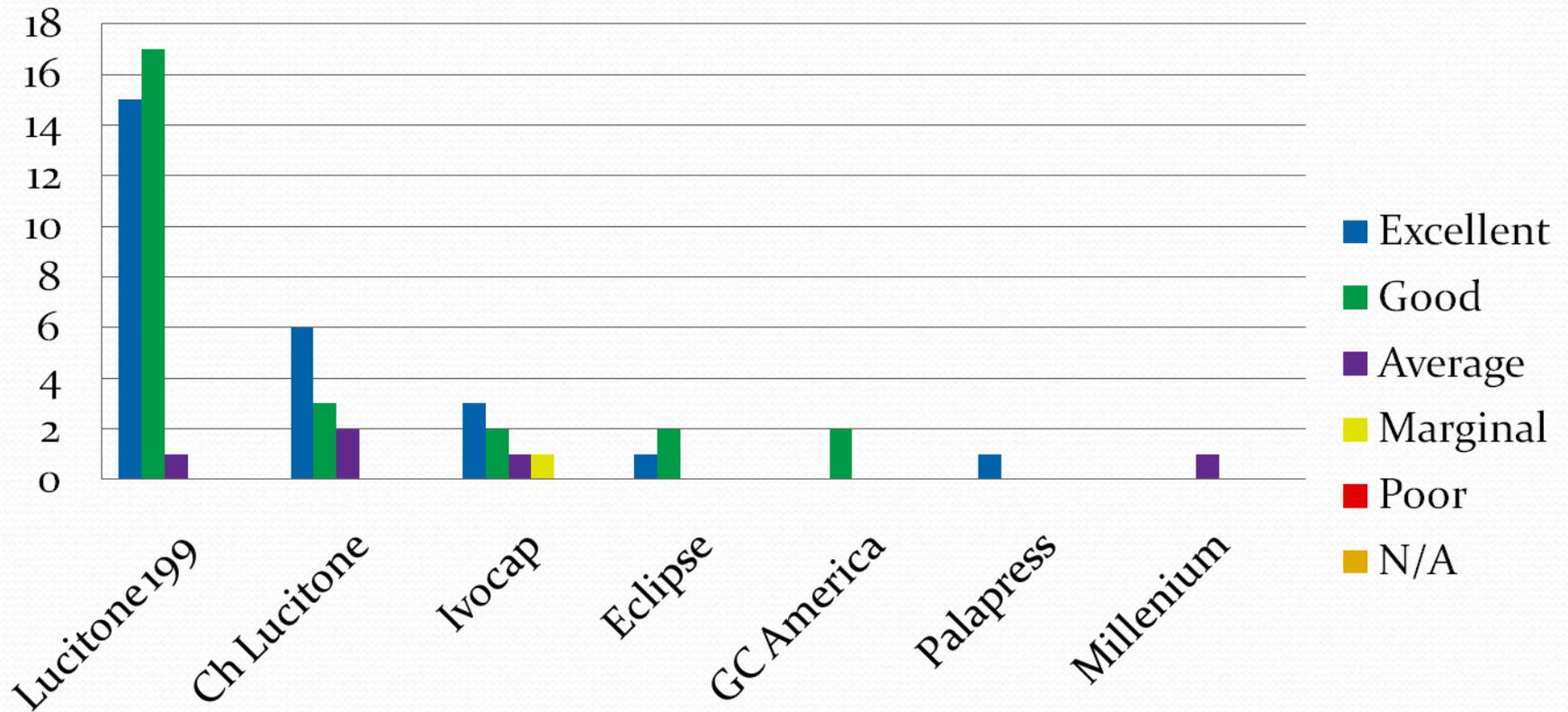
# Market Share by Company

## Denture Resin



# User Satisfaction

## Denture Resin

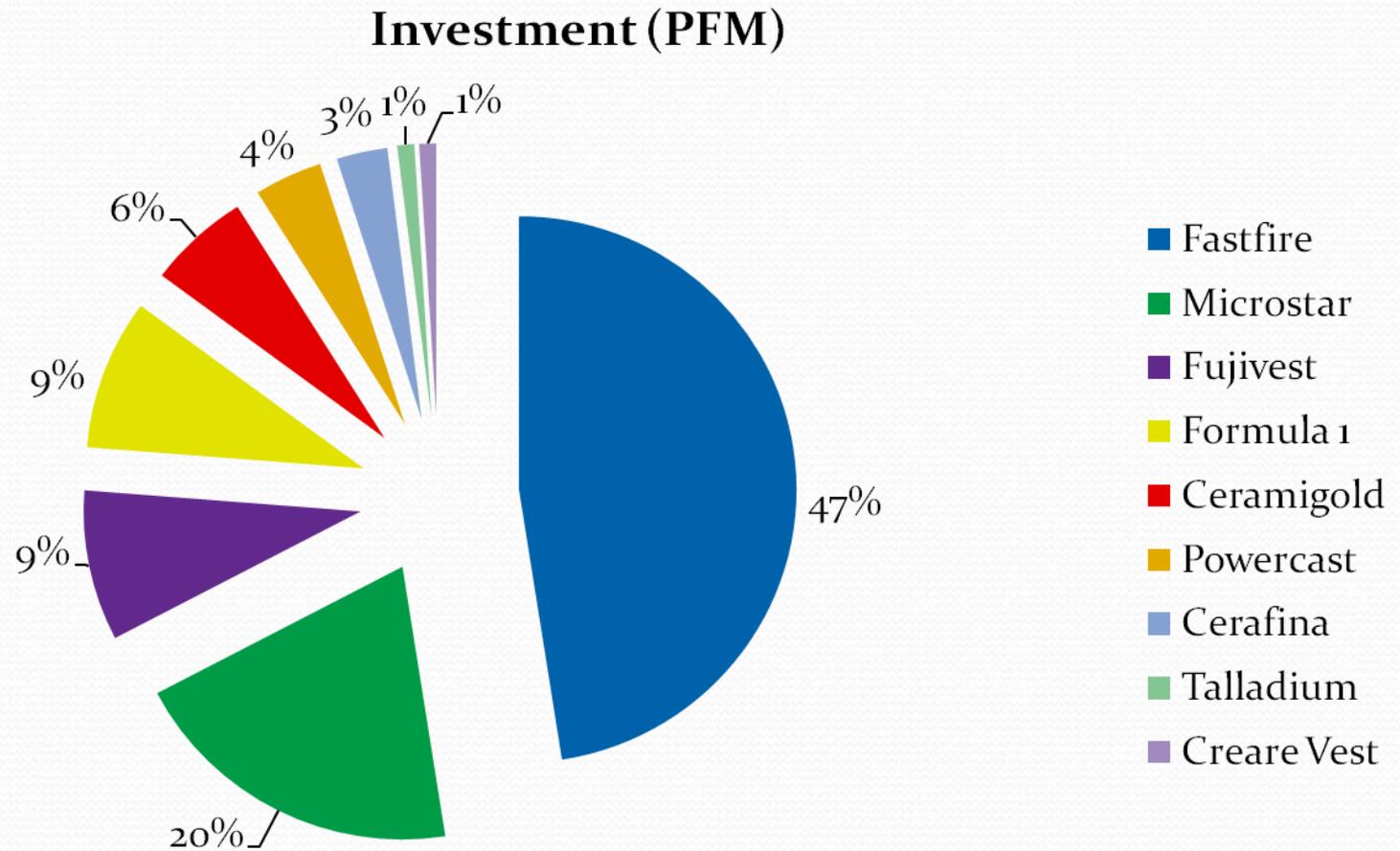


## **Investment (PFM\*)**

Investments are products used to form castings for molten metal. Investments are composed of a refractory substance, like cristobalite or quartz, and a binder. Common binders are gypsum, phosphate, and silicate compounds. As a result, investments are often described as gypsum, phosphate, or silicate bound. This USAF survey revealed that 47% of the labs use Fastfire for investing porcelain fused to metal crowns followed by Microstar 20%, Fujivest 9%, Formula 1 9%, Ceramigold 6%, Powercast 4%, Cerafina 3%, Talladium 1% and Creare Vest 1%. Overall the majority of survey participants were satisfied with their investment.

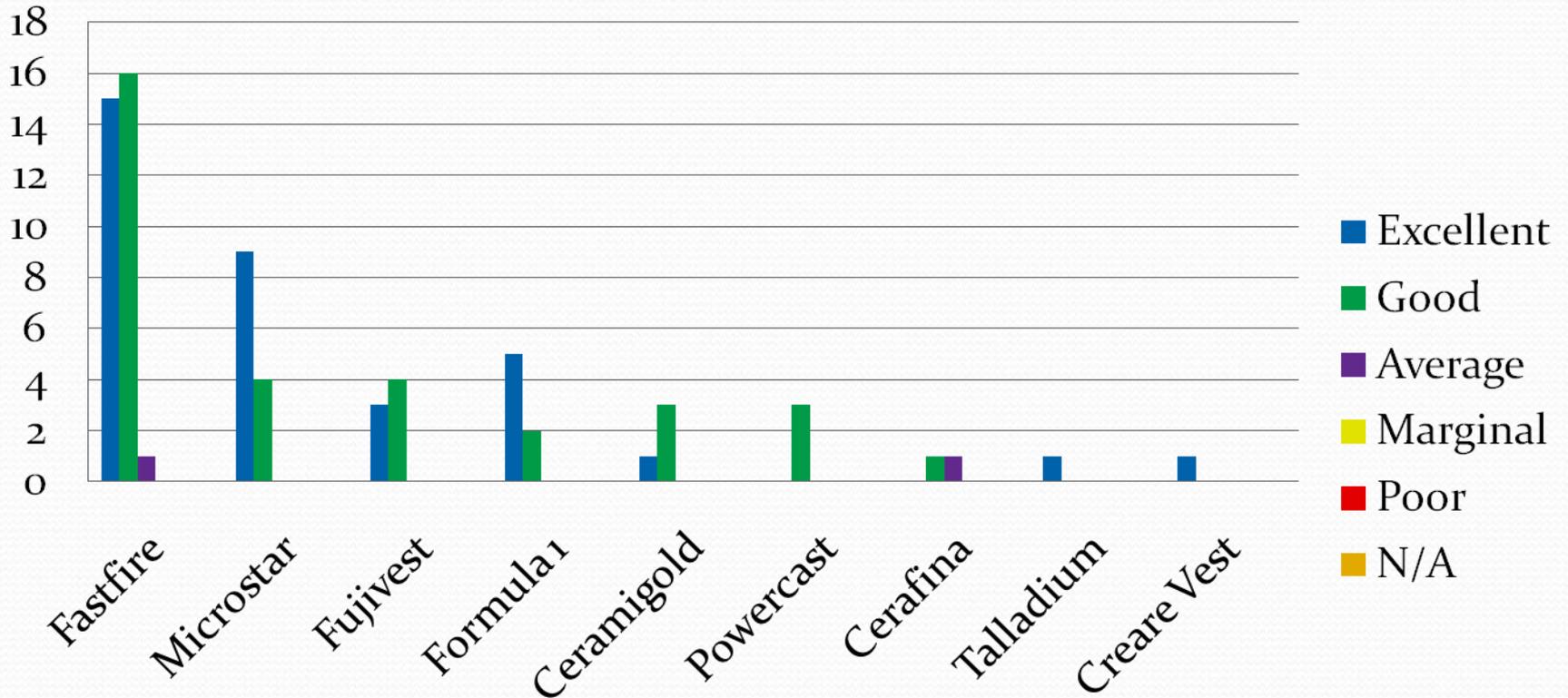
\*Porcelain Fused to Metal

# Market Share by Company



# User Satisfaction

## Investment (PFM)

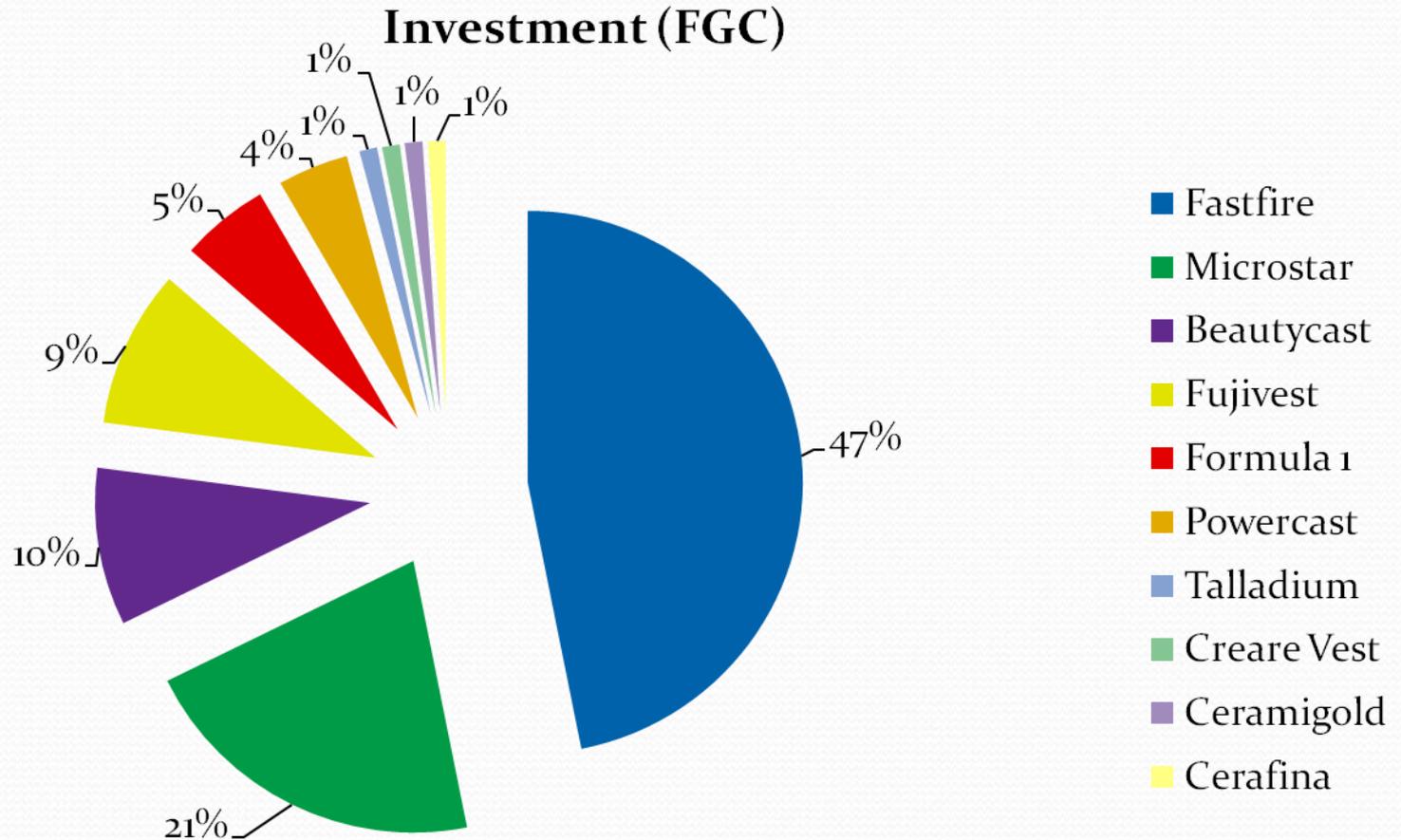


## **Investment (FGC\*)**

The DECS Laboratory Equipment/Product survey revealed that 47% of AF dental laboratories use Fastfire for investing gold crowns followed by Microstar 21%, Beautycast 9%, Fujivest 9%, Formula 1 5%, Powercast 4%, Talladium 1%, Create Vest 1%, Ceramigold 1% and Cerafina 1%. No positive or negative additional comments were provided.

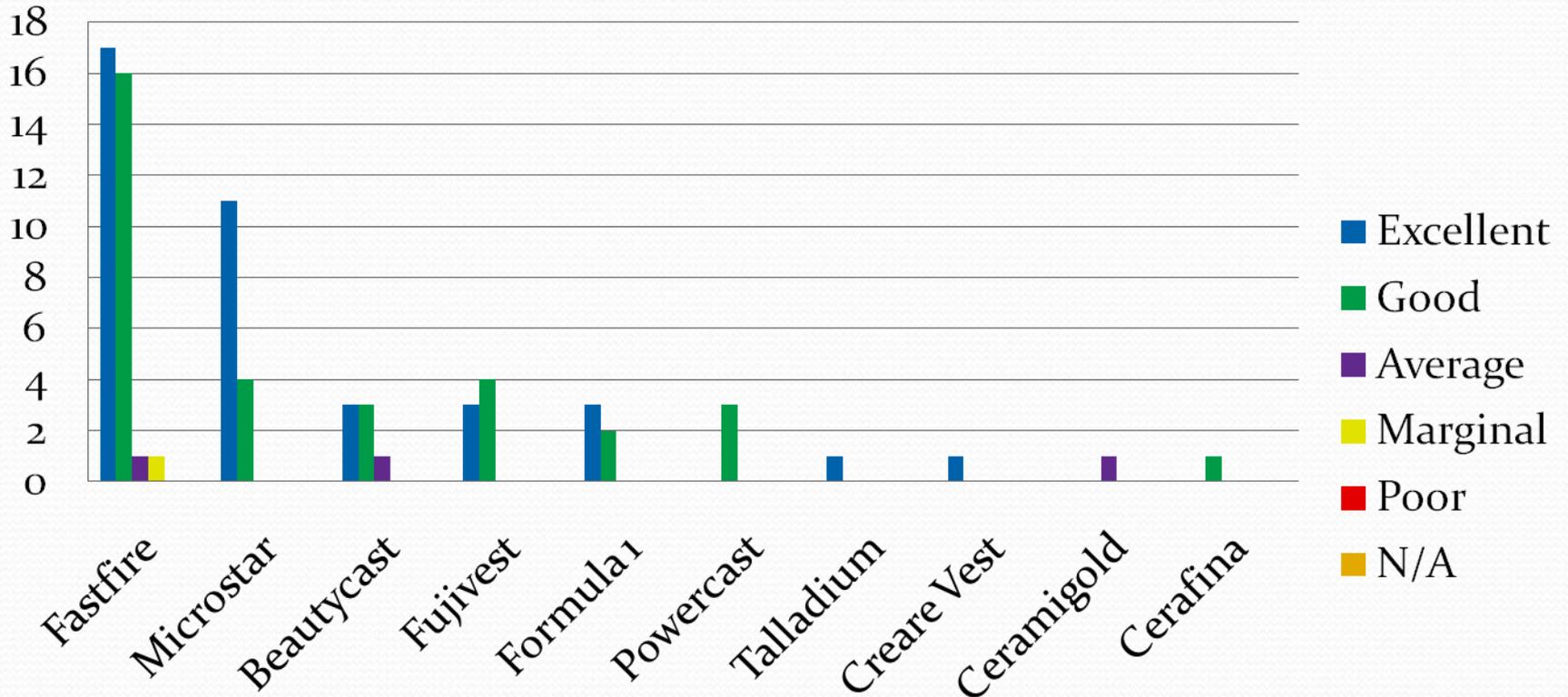
\*Full Gold Crown

# Market Share by Company



# User Satisfaction

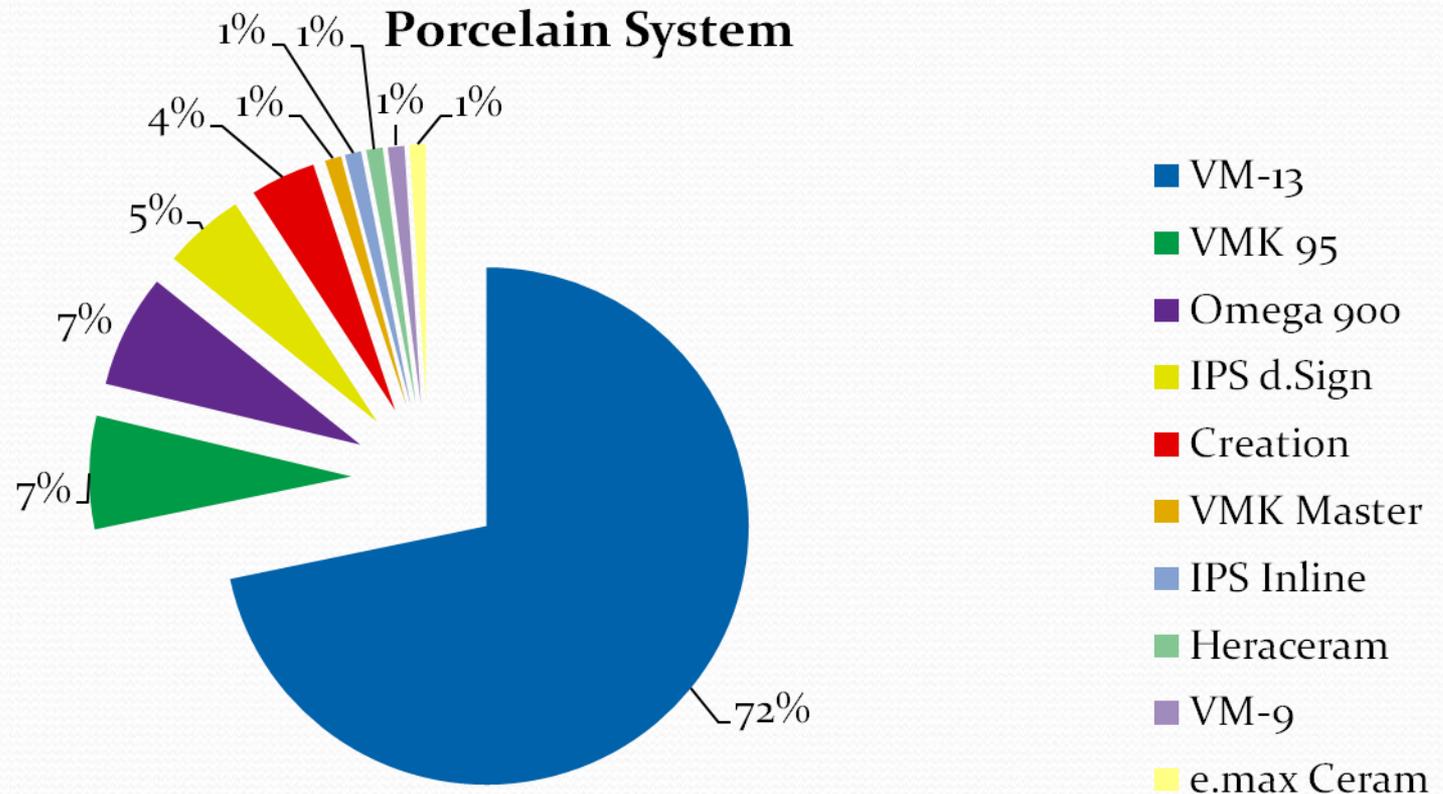
## Investment (FGC)



## Porcelain Systems

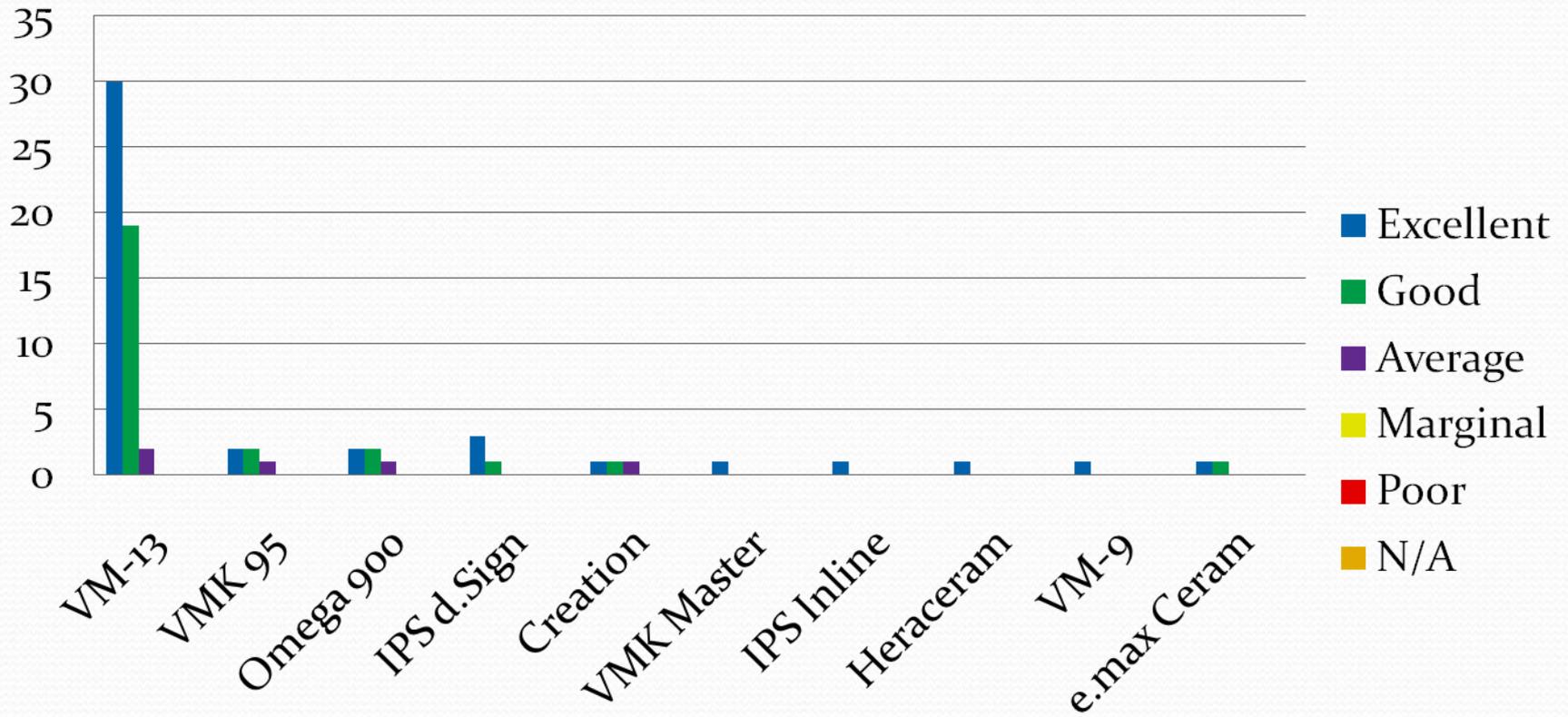
Porcelain is used to fabricate all ceramic and porcelain fused-to-metal dental restorations. Porcelain possesses a translucency that makes this type of dental restoration the most esthetic and life like of all the different types of fabricated prostheses. The highest market share is held by VM-13 72% followed by VMK95 7%, Vita Omega 900 7%, IPS d.sign 5%, Creation 4%, VMK Master 1%, IPS Inline 1%, Heraceram 1%, VM-9 1% and e.max Ceram 1%. VM-13 porcelain received positive comments on the handling characteristics. One participant reported that matching shades had improved since switching from VMK 95 to VM-13. Negative comments referred to the porcelain fracturing, disbonding and excessive shrinkage.

# Market Share by Company



# User Satisfaction

## Porcelain System

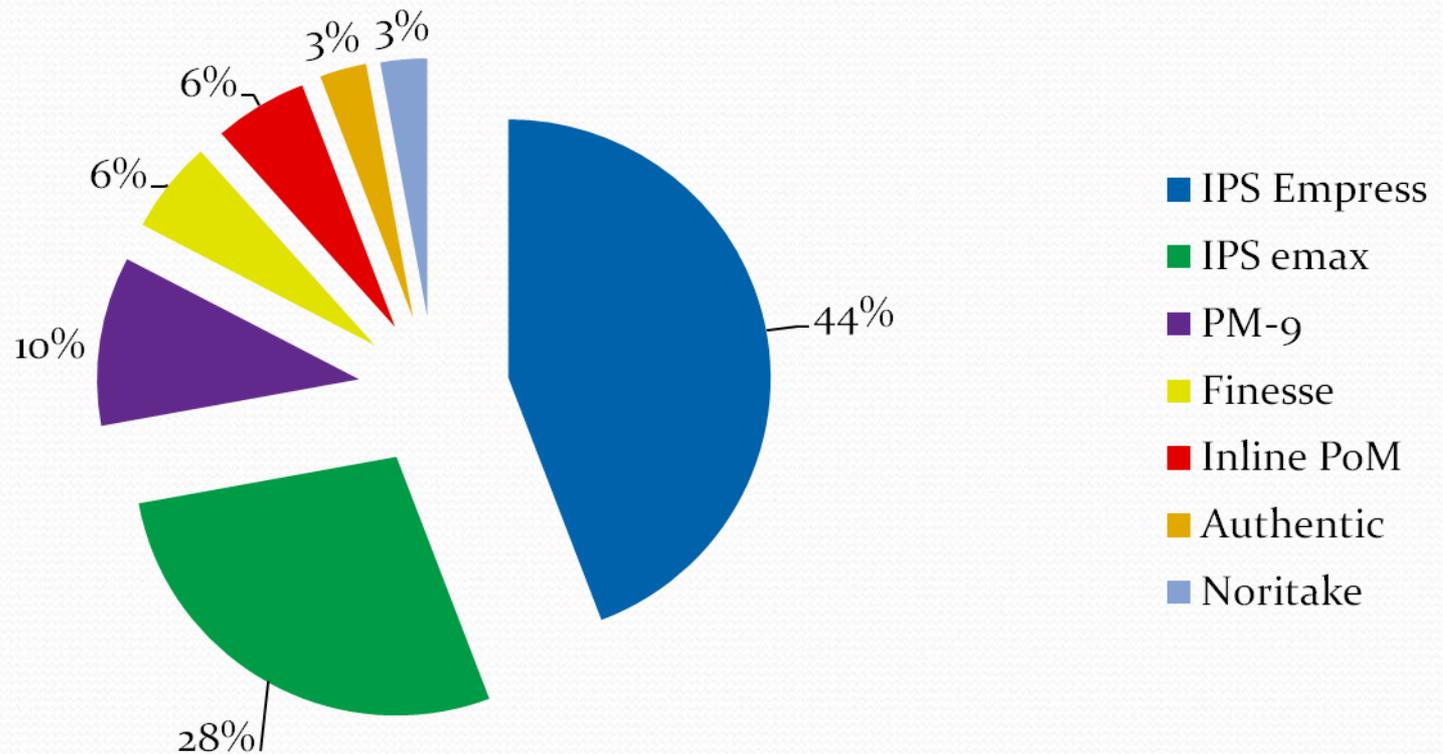


## **Pressable System**

Pressable porcelain systems allow the fabrication of high strength porcelain restorations. Our survey revealed that many USAF labs 44% are using IPS Empress followed by IPS e.max 28%, PM-9 10%, Finesse 6%, Inline PoM 6%, Authentic 3%, and Noritake 3%. One survey participant reported that PM-9 fractured easily. No other comments were provided.

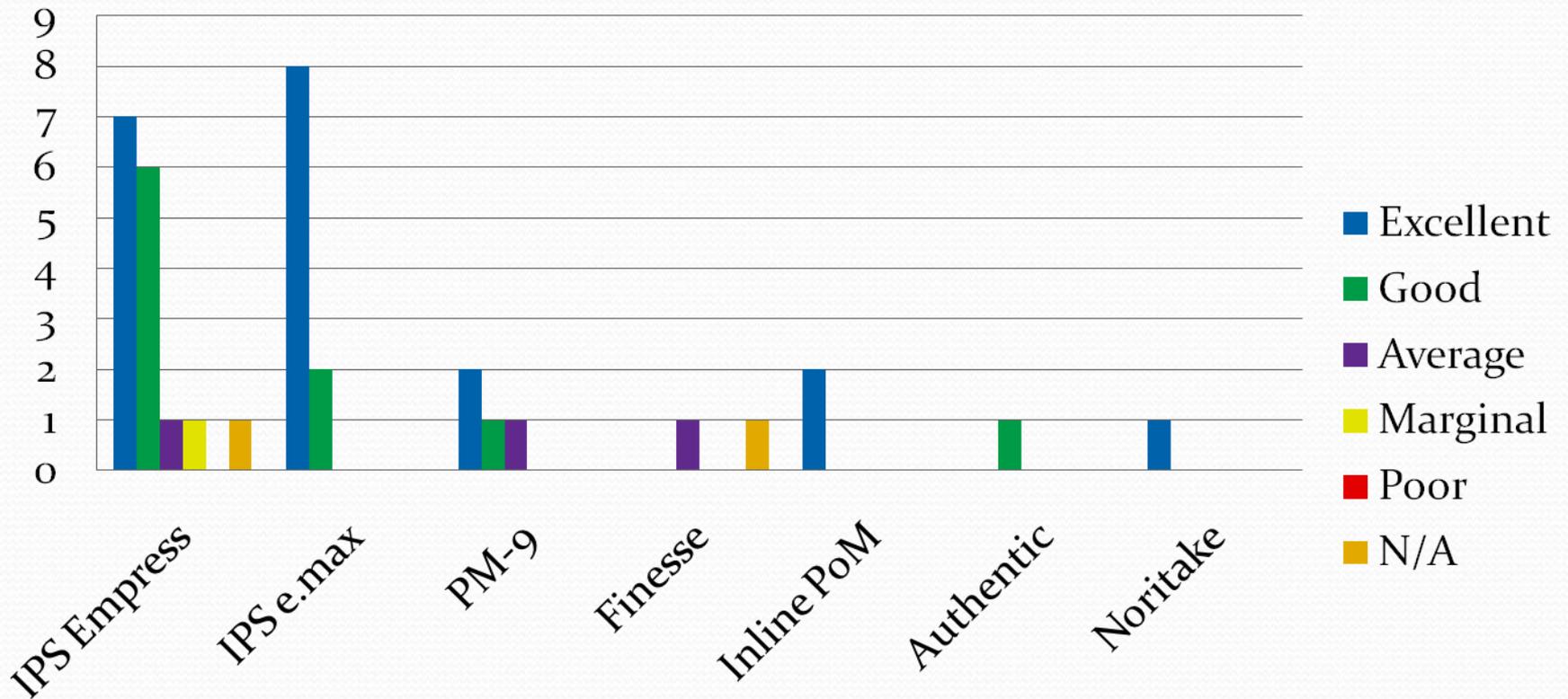
# Market Share by Company

## Porcelain System



# User Satisfaction

## Pressable System



## **Disinfectant**

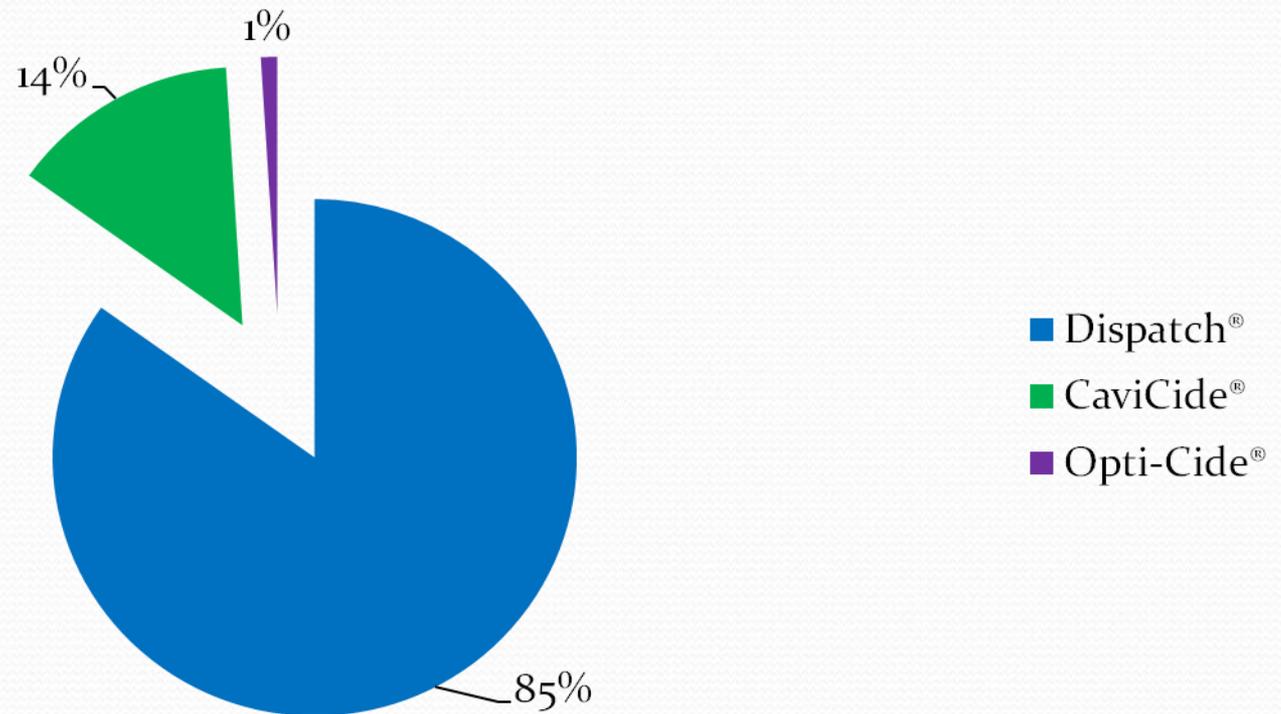
Disinfection is the destruction of pathogenic microorganisms. Disinfection is less lethal than sterilization because it destroys the majority of recognized pathogenic microorganisms but not necessarily all microbial forms (e.g., bacterial spores).

Disinfectants used in the dental lab need to be tuberculocidal and registered by the Environmental Protection Agency (EPA).

This survey revealed the majority of USAF labs 85% use Dispatch<sup>®</sup> as a disinfectant followed by CaviCide<sup>®</sup> 14% and Opti-Cide<sup>®</sup> 1%. CaviCide<sup>®</sup> received a negative comment for staining surfaces pink. No other significant comments were provided.

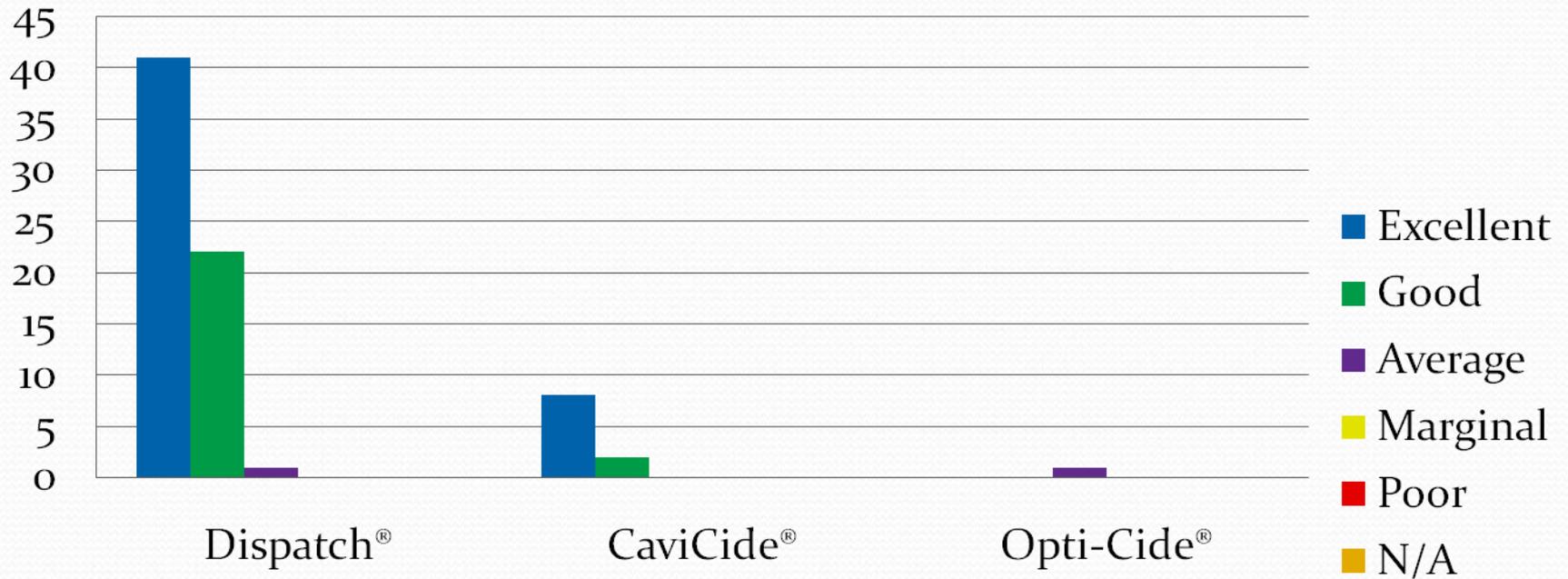
# Market Share by Company

## Disinfectant

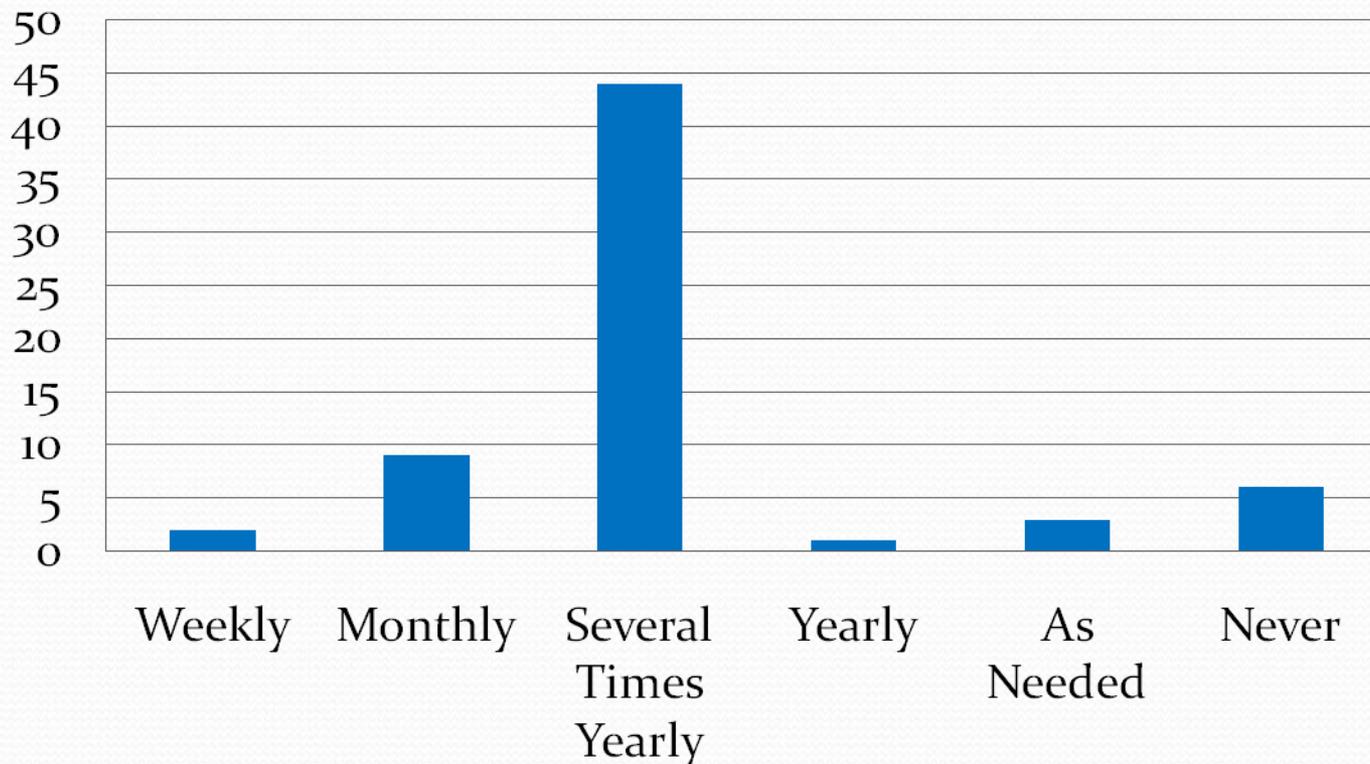


# User Satisfaction

## Disinfectant



# How Often Do You Visit the DECS Web site to Obtain Dental Laboratory Equipment/Product Information?



# Have You Contacted DECS for Dental Laboratory Equipment/Product Information by Phone or E-mail in the Past Year?

